TM-A14PN
TM-A14PN-K

JVC

# SERVICE MANUAL

## COLOUR VIDEO MONITOR

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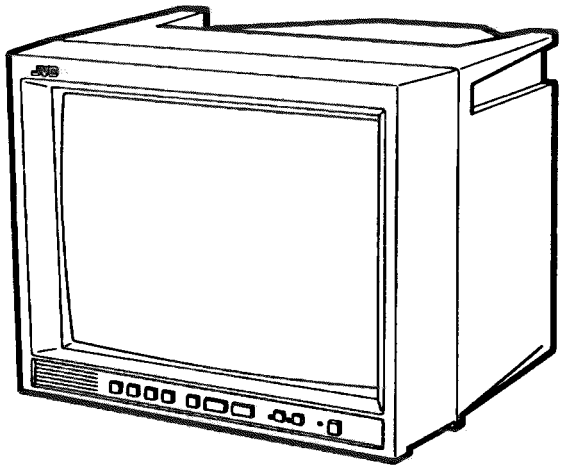
# TM-A14PN
# TM-A14PN-K



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# SPECIFICATIONS

| Item | Content |
|---|---|
| **Colour system** | PAL / NTSC 3.58 |
| **Picture tube** | 36cm measured diagonally, flat square type, 90° deflection,<br>in-line gun, vertical line trio type (phosphor stripe pitch 0.65 mm) |
| **Effective screen size** | 280.8mm × 210.6mm (W × H) / 335.4mm (Diagonal) |
| **Scanning frequency** | (H) 15.734 kHz (NTSC)<br>15.625 kHz (PAL)<br>(V) 59.94 Hz (NTSC)<br>50Hz (PAL) |
| **Horizontal resolution** | 320TV line or more (Y/C input mode) |
| **High Voltage** | 24.0kV~26.0kV |
| **Input / Output** | |
| **Composite video signal** | INPUT A,B(2lines) : BNC × 2each (with 1 bridge-connected output)<br>With automatic termination<br>1Vp-p 75Ω |
| **Y/C Separate (1line)** | Mini-DIN 4pin with automatic termination<br>Y: 1.0Vp-p 75Ω<br>C: 0.286Vp-p 75Ω (NTSC)<br>0.3Vp-p 75Ω (PAL) |
| **Audio** | AUDIO A, B : RCA × 2each<br>Monaural 0.5Vrms, high-impedance<br>(with 1 bridge-connection output) |
| **Audio power output** | 1W (Monaural) |
| **Speaker** | 8cm round × 1 8Ω |
| **Power requirements** | 230V AC, 50/60 Hz |
| **Power consumption** | 0.53A maximum |
| **Operation temperature** | 0~40℃ |
| **Operation humidity** | 20~80% (non-condensing) |
| **Dimension** | 368mm × 310mm × 371.5mm (W × H × D) |
| **Mass** | 9.4kg |

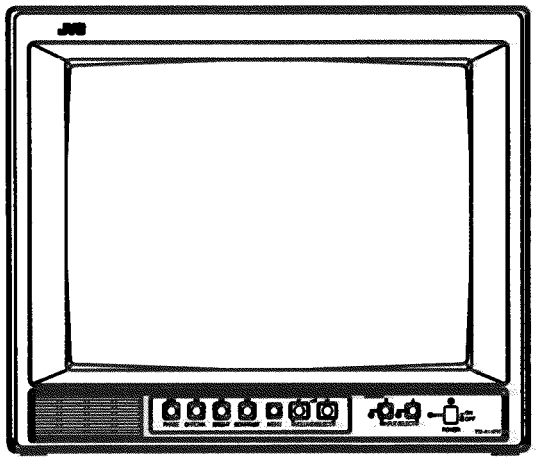
*Design & specification are subject to change without notice.*

# OPERATING INSTRUCTIONS [TM-A14PN-K]

JVC

## COLOUR VIDEO MONITOR

# TM-A14PN-K INSTRUCTIONS



**Thank you for purchasing this JVC colour video monitor. Before using it, read and follow all instructions carefully to take full advantage of the monitor's capabilities.**

# SAFETY PRECAUTIONS

In order to prevent any fatal accidents caused by misoperation or mishandling the monitor, be fully aware of all the following precautions.

**WARNINGS**
To prevent fire or shock hazard, do not expose this monitor to rain or moisture. Dangerous high voltages are present inside the unit. Do not remove the back cover of the cabinet. When servicing the monitor, contact qualified service personnel. Never try to service it yourself.

**WARNING :** THIS APPARATUS MUST BE EARTHED.

Machine Noise Information Ordinance 3. GSGV, January 18, 1991: The sound pressure level at the operator position is equal or less than 70 dB(A) according to ISO 7779.

## PRECAUTIONS

- Use only the power source specified on the unit.
- When not using this unit for a long period of time, or when cleaning it, be sure to disconnect the power plug from the AC outlet.
- Do not allow anything to rest on the power cord. And do not place this unit where people will tread on the cord.
- Do not overload wall outlets or power cords as this can result in a fire or electric shock.
- Avoid using this unit under the following conditions:
  - in extremely hot, cold or humid places,
  - in dusty places,
  - near appliances generating strong magnetic fields,
  - in places subject to direct sunlight,
  - in badly ventilated places,
  - in automobiles with doors closed
- Do not cover the ventilation slots while in operation as this could obstruct the required ventilation flow.
- When dust accumulates on the screen surface, clean it with a soft cloth.
- Unplug this unit from the AC outlet and refer servicing to qualified service personnel under the following conditions:
  - when the power cord is frayed or the plug is damaged,
  - if liquid has been spilled into the unit,
  - if the unit has been dropped or the cabinet has been damaged,
  - when the unit exhibits a distinct change in performance.
- Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Always refer servicing to qualified service personnel.
- When replacement parts are required, have the service personnel verify in writing that the replacement parts he/she uses have the same safety characteristics as the original parts. Use of manufacture's specified replacement parts can prevent fire, shock, or other hazards.
- Upon completion of any servicing or repair work to this unit, please ask the service personnel to perform the safety check described in the manufacturer's service literature.
- When this unit reaches the end of its useful life, improper disposal could result in a picture tube implosion. Ask qualified service personnel to dispose of this unit.

## SCREEN BURN

- It is not recommended to keep a certain still image displayed on screen for a long time as well as displaying extremely bright images on screen. This may cause a burning (sticking) phenomenon on the screen of cathode-ray tube. This problem does not occur as far as displaying normal video playback motion images.



## POWER CONNECTION

**WARNING**
**Do not cut off the main plug from this equipment.**
If the plug fitted is not suitable for the power points in your home or the cable is too short to reach a power point, then obtain an appropriate safety approved extension lead or adapter or consult your dealer.

If nonetheless the mains plug is cut off, remove the fuse and dispose of the plug immediately, to avoid a possible shock hazard by inadvertent connection to the main supply.

If a new main plug has to be fitted, then follow the instruction given below:

**WARNING:**
THIS APPARATUS MUST BE EARTHED.

**IMPORTANT.**
The wires in the mains lead on this product are coloured in accordance with the following cord:

| | |
|---|---|
| Green-and-yellow | : Earth |
| Blue | : Neutral |
| Brown | : Live |

As these colours may not correspond with the coloured making identifying the terminals in your plug, proceed as follows:

The wire which is coloured green-and-yellow must be connected to the terminal which is marked with the letter E or the safety earth symbol ⏚ or coloured green or green-and-yellow.

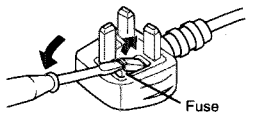
The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.

The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

When replacing the fuse, be sure to use only a correctly rated approved type, re-fit the fuse cover.

**IF IN DOUBT —— CONSULT A COMPETENT ELECTRICIAN.**

**How To Replace The Fuse**
Open the fuse compartment with the blade screwdriver, and replace the fuse.

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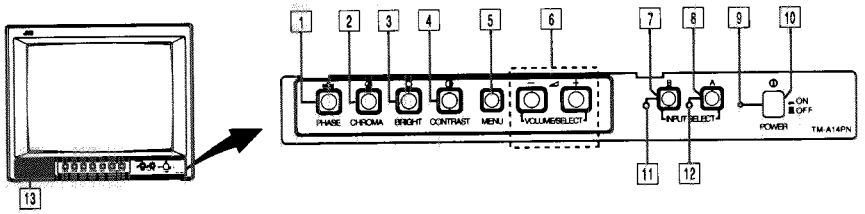
# CONTROLS AND FEATURES

## FRONT VIEW

### <Front Panel>




**1 Phase button [PHASE]**
Press this button to set the picture hue adjustment mode. Adjust the value with the VOLUME/SELECT buttons. Also used as a control button in the menu function mode.

**2 Chroma button [CHROMA]**
Press this button to set the picture colour density adjustment mode. Adjust the value with the VOLUME/SELECT buttons. Also used as a control button in the menu function mode.

**3 Brightness button [BRIGHT]**
Press this button to adjust picture brightness. Adjust the value with the VOLUME/SELECT buttons. Also used as a control button in the menu function mode.

**4 Contrast button [CONTRAST]**
Press this button to adjust picture contrast. Adjust the value with the VOLUME/SELECT buttons. Also used as a control button in the menu function mode.

**5 Menu button [MENU]**
Displays and disappears the <MENU> screen. Pressing the PHASE button with the Menu button depressed will display the <SET-UP MENU> screen.

**6 Volume/Select buttons [VOLUME/SELECT – +]**
Adjusts the speaker volume. Also used as a control button in the menu function mode.

**7 Input B button [INPUT SELECT B]**
Selects the video signal input to the VIDEO B terminal and the audio signal input to the AUDIO B terminal (RCA connector) on the rear panel. When selected, the input B indicator [11] lights.

**Note:**
* The VIDEO B terminals include a video terminal (BNC connector) and a Y/C terminal (mini-DIN 4-pin connector). The Y/C (S-video) terminal is given priority.

**8 Input A button [INPUT SELECT A]**
Selects the video signal input to the VIDEO A terminal (BNC connector) and the audio signal input to the AUDIO A terminal (RCA connector) on the rear panel. When selected, the input A indicator [12] lights.

**9 Power indicator**
Lights in green when the power is ON.
**Lit** : When the power is on.
**Unlit** : When the power is off.

**10 Power switch [POWER]**
Press this switch to turn the power on or off.
**ON** : Power is turned on.
**OFF** : Power is turned off.

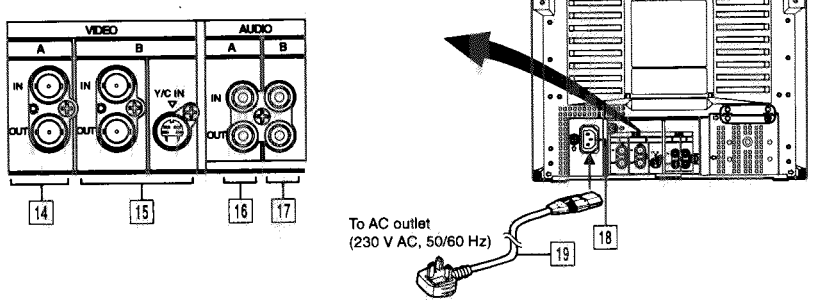
**11 Input B indicator**
Lights in green when the Input B is selected.

**12 Input A indicator**
Lights in green when the Input A is selected.

**13 Built-in speaker**
The speaker is located inside.

## REAR VIEW

### <Rear Panel>




**14 Video A terminals [VIDEO A IN/OUT]**
Video signal input (IN) and output (OUT) terminals.
The output terminal is bridge-connected.
**IN** : Video signal input terminal
**OUT** : Bridge-connected video signal output terminal

**Notes:**
* For corresponding audio signals, use the AUDIO A terminals [16].
* Also refer to the Basic connection Example on page 11.

**15 Video B terminals [VIDEO B IN/OUT]**
**[ BNC connector ]**
Video signal input (IN) and output (OUT) terminals.
The output terminal is bridge-connected.
**IN** : Video signal input terminal
**OUT** : Bridge-connected video signal output terminal

**[ Y/C connector ]**
Y/C (S-Video) signal input (mini-DIN 4-pin connector) terminal.
**Y/C IN** : Y/C signal input terminal.

**Notes:**
* For corresponding audio signals, use the AUDIO B terminals [17].
* There is no Y/C (S-video) signal output terminal.
* When both VIDEO B terminals are connected (input) at the same time, the Y/C terminal is given priority.
* Also refer to the Basic connection Example on page 11.

**16 Audio A terminal [AUDIO A IN/OUT]**
Input (IN) and output (OUT) terminals for the audio signal corresponding the VIDEO A terminals [14]. The output terminal is bridge-connected.
**IN** : Audio signal input terminal
**OUT** : Bridge-connected audio signal output terminal

**Notes:**
* For corresponding video signals, use the VIDEO A terminal [14].
* Also refer to the Basic connection Example on page 11.

**17 Audio B terminals [AUDIO B IN/OUT]**
Input (IN) and output (OUT) terminals for the audio signals corresponding to the VIDEO B terminals [15]. The output terminal is bridge-connected.
**IN** : Audio signal input terminal
**OUT** : Bridge-connected audio signal output terminal

**Notes:**
* For corresponding video signals, use the VIDEO B terminals [15].
* Also refer to the Basic connection Example on page 11.

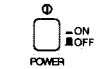
**18 AC inlet [AC IN]**
Power input connector. Connect the provided AC power cord [19] to an AC outlet (230 V AC, 50/60 Hz).

**19 Power cord**
Connects the provided power cord (230 V AC, 50/60 Hz) to the AC IN connector.

# HOW TO HANDLE BASIC OPERATIONS

## BASIC OPERATION

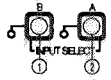
### 1. Press the POWER switch to turn on the power.




■ON : Power turns ON. (Power indicator: lit)
■OFF : Power turns OFF. (Power indicator: unlit)

### 2. Press the INPUT SELECT button to choose input.

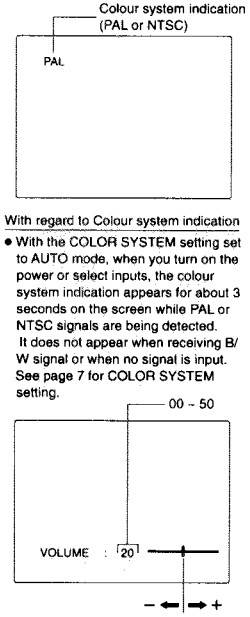
Selects video/audio signals input to terminals on the rear panel.




| INPUT SELECT button | Terminals on the rear panel | |
|---|---|---|
| | Video signal input | Audio signal input |
| ① Input A | VIDEO A terminal | AUDIO A terminal |
| ② Input B | VIDEO B terminal | AUDIO B terminal |

### 3. Press the VOLUME/SELECT button to adjust the speaker volume.

Press this button to display the speaker volume level on the screen.
+ : The Built-in speaker volume is increased. (00 → 50)
– : The Built-in speaker volume is decreased. (50 → 00)
* Screen indication will disappear about 10 seconds after operating.




With regard to Colour system indication

- With the COLOR SYSTEM setting set to AUTO mode, when you turn on the power or select inputs, the colour system indication appears for about 3 seconds on the screen while PAL or NTSC signals are being detected. It does not appear when receiving B/W signal or when no signal is input. See page 7 for COLOR SYSTEM setting.

## PICTURE ADJUSTMENT

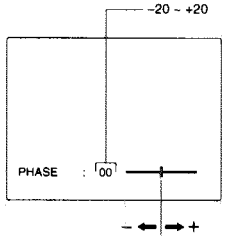
### 1. Press select button corresponding to the item you want to adjust.

The item you select is displayed on the screen.
① PHASE ( ) : Phase control
② CHROMA ( ) : Chroma control
③ BRIGHT ( ) : Brightness control
④ CONTRAST ( ) : Contrast control

### 2. Adjust with the VOLUME/SELECT button.

| Items | VOLUME/SELECT button | |
|---|---|---|
| | – | + |
| PHASE (Phase) | reddish | greenish |
| CHROMA (Chroma) | lighter | deeper |
| BRIGHT (Brightness) | darker | brighter |
| CONTRAST (Contrast) | lower | higher |

* Screen indication will disappear about 10 seconds after operating.




**Notes:**

- Phase control is effective only in the NTSC colour system mode.
- Chroma control is not effective when receiving B/W or when no signal is input.
- When the Chroma control is set to level " –20", the picture turns monochrome.
- " NO EFFECT" is displayed (For about 3 seconds) when your selected function has no effect.





# HOW TO USE THE MENU FUNCTIONS

## DISPLAY AND SELECTION IN THE <MENU> SCREEN MODE (SETTING)

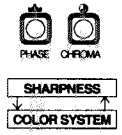
You can set the following menu items.
Set them depending on your needs.

• SHARPNESS • COLOR SYSTEM

### 1. Press the MENU button.

The <MENU> screen is displayed.

### 2. Press the PHASE ( ) or CHROMA ( ) button to select MENU items.




A selection mark (►) is put next to the selected item.

| Front panel button | Function displayed | Contents |
|---|---|---|
| PHASE ( ) | ▼ | Advance selection mark (►) |
| CHROMA ( ) | ▲ | Reverse selection mark (◄) |

### 3. Press the VOLUME/SELECT button to set.

| Front panel button | Function displayed | Contents |
|---|---|---|
| VOLUME/ SELECT (+) | + | Increase (to max. value) |
| | ► | Advance the setting value |
| VOLUME/ SELECT (–) | – | Decrease (to min. value) |
| | ◄ | Reverse the setting value |

| Menu items | Purpose | Setting range |
|---|---|---|
| SHARPNESS | Picture sharpness | 00 ⟷ +1 ⟷ +2 ⟷ +3 ⟷ +4 ⟷ +5 |
| COLOR SYSTEM | Colour system | AUTO ⟷ NTSC ⟷ PAL |

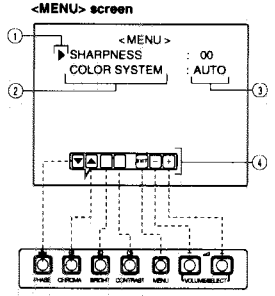
* Normally set the COLOR SYSTEM to the AUTO mode. If reception in the AUTO mode is not good, set it to the exclusive mode (NTSC or PAL) corresponding to the received colour system.

### 4. If you want to set the other menu items, repeat procedures 2 and 3.

### 5. Press the MENU button to quit.

| Front panel button | Function displayed | Contents |
|---|---|---|
| MENU | EXIT | Quit (or Release) the <MENU> screen |

**<MENU> screen**




<Front panel button>

① **Selection mark (►):** Indicates the menu item you select.
② **Menu item:** Menu items you can select.
③ **Setting display:** Indicates the current settings (value).
④ **Function display:** The functions of the front panel buttons (7 buttons on the left.) correspond to the function displayed.

| Function displayed | Contens |
|---|---|
| ▼ | Advance the menu item. |
| ▲ | Reverse the menu item. |
| – | Lower the adjustment value. (to the minimum) |
| + | Raise the adjustment value. (to the maximum) |
| ► | Advance the setting value. |
| ◄ | Reverse the setting value. |
| EXIT | Exits the <MENU> screen. |

# HOW TO USE THE MENU FUNCTIONS (cont'd)

## DISPLAY AND SELECTIONS IN THE <SET-UP MENU> MODE (SETTING)

You can set the following set-up menu items.

- H. POSITION
- WHITE BALANCE
- CONTROL LOCK

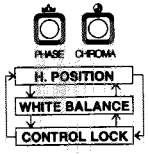
**Note:**

- Parameters for H. POSITION can be set separately depending on the video input (Input A or Input B) selected by the input select buttons on the front panel. Select the required video input with the input select buttons on the front panel in advance.

### *1. While pressing the MENU button, press the PHASE ( ) button.*

The <SET-UP MENU> screen is displayed.

### *2. Press the PHASE ( ) or CHROMA ( ) button to select the desired menu item.*




A selection mark (►) is put next to the selected item.

| Front panel button | Function displayed | Contents |
|---|---|---|
| PHASE ( ) | ▼ | Advance selection mark (►) |
| CHROMA ( ) | ▲ | Reverse selection mark (◄) |

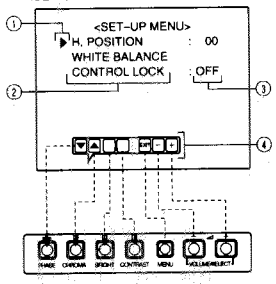
### *3. Press the VOLUME/SELECT button to set.*

| Front panel button | Function displayed | Contents |
|---|---|---|
| VOLUME/ SELECT (+) | + | Increase (to max. value) |
| | ► | Advance the setting value |
| | CUTO | Selects CUT OFF setting screen |
| VOLUME/ SELECT (–) | – | Decrease (to min. value) |
| | ◄ | Reverse the setting value |
| | DRV | Selects DRIVE setting screen |

**Notes:**

- For the WHITE BALANCE setting, select the CUT OFF or DRIVE setting screen, then select the buttons (PHASE/ CHROMA/BRIGHT) corresponding to the function indicated (R/G/B).
- To return to the <SET-UP MENU> screen, press the EXIT (MENU) button.

**<SET-UP MENU> screen**




<Front panel button>

① **Selection mark (►):** Indicates the menu item you select.
② **Menu item:** Menu items you can select.
③ **Setting display:** Indicates the current settings (value).
④ **Function display:** The functions of the front panel buttons (7 buttons on the left.) correspond to the function displayed.

| Function displayed | Contens |
|---|---|
| ▼ | Advance the menu item. |
| ▲ | Reverse the menu item. |
| – | Lower the adjustment value. (to the minimum) |
| + | Raise the adjustment value. (to the maximum) |
| ► | Advance the setting value. |
| ◄ | Reverse the setting value. |
| EXIT | Exit the <SET-UP MENU> screen (release) |
| DRV | Selects DRV adjustment |
| CUTO | Selects CUT OFF adjustment |
| R | Adjusts red signal level |
| G | Adjusts green signal level |
| B | Adjusts blue signal level |
| DISP | Turns the ON-SCREEN display on or off. (This function is effective only in the DRIVE or CUT OFF adjustment mode.) |

| Set-up menu items | | Purpose | Settings |
|---|---|---|---|
| H. POSITION | | Adjusts the horizontal position of the screen (+ : Horizontal position shifts to the right/–: Horizontal position shifts to the left) | –05 ↔ –04 ← •••• → –01 ↔ 00 ↔ +01 ← •• → +04 ↔ +05 |
| WHITE BALANCE | | Adjusts the white balance | Selects DRIVE (DRV) or CUT OFF (CUTO) adjustment. Screen setting is changed to the selected setting mode. Select R/G/B buttons corresponding to the function display to adjust. |
| DRIVE | R.DRIVE | Adjusts red level | –09 ↔ –08 ← ••••••• → –01 ↔ 00 ↔ +01 ← ••••••• → +08 ↔ +09 |
| | B.DRIVE | Adjusts blue level | –09 ↔ –08 ← ••••••• → –01 ↔ 00 ↔ +01 ← ••••••• → +08 ↔ +09 |
| CUT OFF | R. CUT OFF | Adjusts red cut off | –09 ↔ –08 ← ••••••• → –01 ↔ 00 ↔ +01 ← ••••••• → +08 ↔ +09 |
| | G. CUT OFF | Adjusts green cut off | –09 ↔ –08 ← ••••••• → –01 ↔ 00 ↔ +01 ← ••••••• → +08 ↔ +09 |
| | B. CUT OFF | Adjusts blue cut off | –09 ↔ –08 ← ••••••• → –01 ↔ 00 ↔ +01 ← ••••••• → +08 ↔ +09 |
| CONTROL LOCK | | Sets the operation buttons on the front panel to control lock mode | OFF ⟷ ON |

### *4. To set the other set-up menu items, repeat the procedures 2 and 3.*

### *5. Press the MENU button to quit.*

| Front panel button | Function displayed | Contents |
|---|---|---|
| MENU | EXIT | Quit (or Release) the <MENU> screen |

**Notes:**

- When the CONTROL LOCK function is set to ON, pressing operation buttons on the front panel will display the message "CONTROL LOCK ON!" on the screen for about 3 seconds.
- The CONTROL LOCK function is maintained even when the power is turned off.
- To turn off the CONTROL LOCK function, while holding the MENU button press the PHASE button. Then set the CONTROL LOCK function to OFF.
- Even when the CONTROL LOCK function is set to ON, the following operations are available:
  - Power Switch operation.
  - Sound volume adjustment with the VOLUME/SELECT button.
  - Display or disappear of the <SET-UP MENU> screen.

# HOW TO INITIALIZE THE SETTING

## SCREEN DISPLAY AND SELECTIONS IN THE <SET-UP MENU> RESET MODE

You can set <MENU> and <SET-UP MENU> screen items, picture adjustment items and the volume level to their factory-set (initial) values.

### *1. Press the Power (⏻) Switch to turn the power OFF (■).*

### *2. While pressing both MENU button and PHASE ( ) buttons, press the Power (⏻) switch to turn the power ON (▬).*

The <SET-UP MENU> RESET screen is displayed.

**Note:**

- The <SET-UP MENU> RESET screen will not be displayed if the MENU or PHASE buttons are pressed for a very short time. Keep pressing them until the display screen appears.

### *3. Setting*

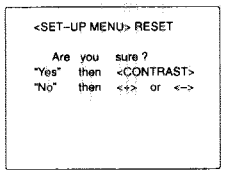
**● Initialization is required.**

Press the CONTRAST ( ◑ ) button.
* When initialization is completed, and the <SET-UP MENU> RESET screen disappears.

**● Initialization is not required.**

Press the VOLUME/SELECT [+] or [–] button.
* Initialization is aborted, and the <SET-UP MENU> RESET screen disappears.

**<SET-UP MENU> RESET screen**




**Initial settings**

| Sorts | Functions (Items) | Initialization (setting) |
|---|---|---|
| <MENU> screen | SHARPNESS | 00 |
| | COLOR SYSTEM | AUTO |
| <SET-UP MENU> screen | H. POSITION | 00 |
| | WHITE BALANCE | |
| | R. CUT OFF | 00 |
| | G. CUT OFF | 00 |
| | B. CUT OFF | 00 |
| | R. DRIVE | 00 |
| | B. DRIVE | 00 |
| | CONTROL LOCK | OFF |
| Picture ajustment | PHASE | 00 |
| | CHROMA | 00 |
| | CONTRAST | 00 |
| | BRIGHT | 00 |
| Volume | VOLUME | 20 |

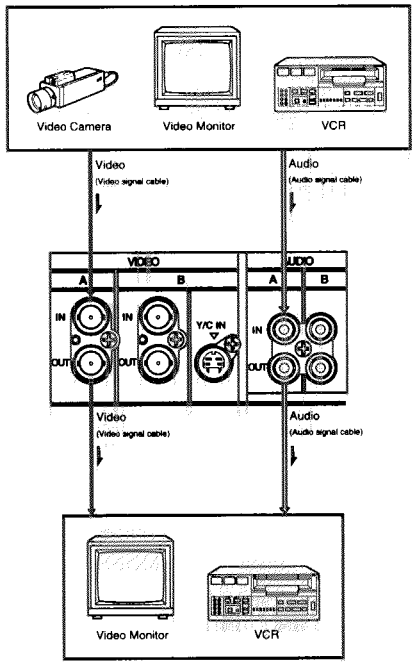


# BASIC CONNECTION EXAMPLE

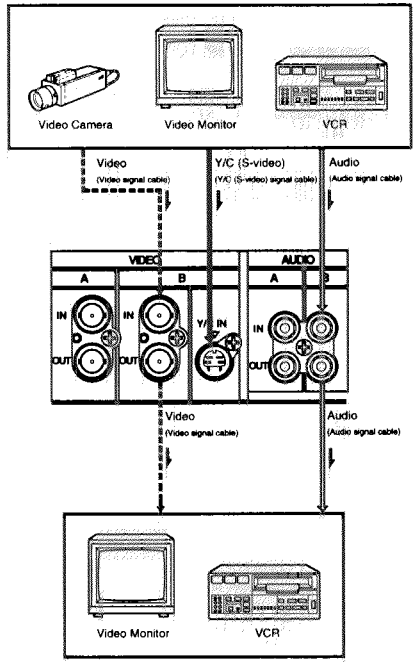
**Notes:**

- Before connecting your system, make sure that all units are turned off.
- The illustration below shows some examples of different connections. Terminal connections may differ depending on the component connected. Be sure to refer to the instructions provided with the unit(s) you are connecting.
- Each pair of input (IN) and output (OUT) terminals are bridge-connected. However, the Y/C input terminal (Y/C IN) has no output terminal (OUT) corresponding to it.
- If you're not connecting any equipment to a bridged output (OUT) terminal, be sure not to connect any other cables to the bridged output (OUT) terminal as this will cause the terminating resistance switch to open (auto terminate function).
- When making a bridge connection, connect the input (IN) and output (OUT) terminals on the monitor to separate video components.
  (For example, if both terminals are connected to the same VCR, resonance may occur except during playback. This is caused by the same video signal "looping" between the VCRs, and is not a malfunction.)
- Select the video input (Input A or Input B) with the input select button on the front panel.

**■ VIDEO A Connection Example (Select Input A button)**




**■ VIDEO B Connection Example (Select Input B button)**



# TROUBLESHOOTING

**Solutions to common problems related to your monitor are described here. If none of the solutions presented here solves the problem, unplug the monitor and consult a JVC-authorized dealer or service center for assistance.**

| Problems | Points to be checked | Measures (Remedy) |
|---|---|---|
| **No power supply.** | Is the power plug loosened or disconnected? | Firmly insert the power plug. |
| **No picture with the power on.** | Is the video signal output from the connected component? | Set the connected component correctly. |
| | Is the input signal selected properly? | Select the required video signal input with the input select button. (See page 6.) |
| | Is the video cable disconnected? | Connect the video signal cable firmly. (See page 11.) |
| **No sound.** | Is the audio signal output from the connected component? | Set the connected component correctly. |
| | Is the volume output set to minimum? | Adjust the speaker volume with the VOLUME/ SELECT button. (See page 6.) |
| | Is the audio cable disconnected? | Connect the audio signal cable firmly. (See page 11.) |
| **Shaking picture.** | Is the monitor close to a device generating a strong magnetic field? | Move the device away from the monitor until the picture stabilizes. |
| **No colours, wrong colour, or dark picture.** | Is the colour system selected properly? | Set the COLOR SYSTEM in the <MENU> screen mode to [AUTO] mode. (See page 7.) |
| | Has the picture control setting (CONTRAST, BRIGHT, CHROMA or PHASE) been changed? | Set each picture control to the standard setting. (See page 6.) |
| **Unnatural, irregularly coloured, or distorted picture.** | Is the monitor close to a speaker, magnet or any other device generating a strong magnetic field? | Move the device away from the monitor and turn the monitor's power off. Wait at least 30 minutes, then turn the power on again. |
| **Front panel button does not function.** | Are the operation buttons on the front panel locked? ( Has CONTROL LOCK function set to ON?) | Set the CONTROL LOCK to OFF in the <SET-UP MENU> screen mode. (See pages 8 and 9.) |

**The following are not malfunctions:**

- When a bright still image (such as a white cloth) is displayed for a long period, it may appear to be coloured. This is due to the structure of the cathode ray tube and will be deleted when another image is displayed.
- You experience a mild electric shock when you touch the picture tube. This phenomenon is due to a normal buildup of static electricity on the CRT and is not harmful.
- The monitor emits a strange sound when the room temperature changes suddenly. This is only a problem if an abnormality appears on the screen as well.



# SPECIFICATIONS

| MODEL | | TM-A14PN-K |
|---|---|---|
| Type | | Colour video monitor |
| Colour system | | PAL, NTSC (3.58) |
| Picture tube | | 36 cm measured diagonally,<br>90° deflection, in-line gun,<br>vertical line trio type<br>(phosphor stripe pitch 0.65 mm) |
| Effective screen size | | Width 280.8 mm<br>Height 210.6 mm<br>Diagonal 335.4 mm |
| Scanning frequency | | H : 15.734 kHz (NTSC), 15.625 kHz (PAL)<br>V : 59.94 Hz (NTSC), 50 Hz (PAL) |
| Horizontal resolution | | 320 TV lines or more<br>(Y/C input mode) |
| Input terminals | VIDEO A | Composite video: 1 line, BNC connector x 2,<br>1 Vp-p, 75 Ω negative sync<br>(bridge connection possible, auto termination) |
| | VIDEO B | Composite video: 1 line, BNC connector x 2,<br>1 Vp-p, 75 Ω negative sync<br>(bridge connection possible, auto termination) |
| | | Y/C-separated: 1 line, mini-DIN 4-pin connector x 1<br>Y: 1.0 Vp-p, 75 Ω<br>C: 0.286 Vp-p, 75 Ω (NTSC), 0.3 Vp-p, 75 Ω (PAL) |
| | AUDIO A | 1 line (monaural), RCA pin x 2, 0.5 V rms, high-impedance<br>(bridge connection possible) |
| | AUDIO B | 1 line (monaural), RCA pin x 2, 0.5 Vrms, high-impedance<br>(bridge connection possible) |
| Audio power output | | 1 W (monaural) |
| Built-in speaker | | 8 cm round x 1, impedance of 8 Ω |
| Environmental conditions | | Operation temperature: 0 – 40 °C<br>Operation humidity: 20 – 80% (non-condensing) |
| Power requirements | | 230 V AC, 50/ 60 Hz<br>(Operating 120 – 230 V AC, 50/60 Hz) |
| Power consumption | | 0.53 A (230 V AC) |
| Dimensions | | Width 368 mm<br>Height 310 mm<br>Depth 371.5 mm |
| Weight | | 9.4 kg |
| Accessory | | AC power cord (2 m) x 1 |

** Illustrations used in this manual are for explanatory purposes only. The appearance of the actual product may differ slightly.*
** Dimensions and weight are approximate.*
** E. & O. E. Design and specifications subject to change without notice.*

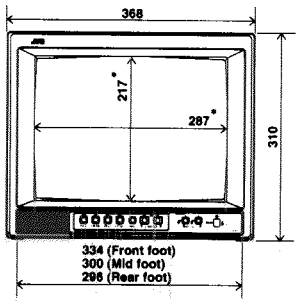


No.51355
1-7

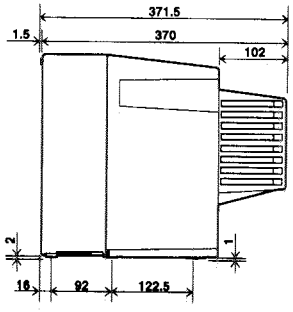
## ■ Dimensions

Unit : mm

< Front View >




< Side View >




* Asterisks (*) are used to indicate front panel dimensions.

## ■ Y/C (Mini DIN 4 pin) terminal specification

| Pin No. | Signal |
|---|---|
| 1 | GND (Y) |
| 2 | GND (C) |
| 3 | Y |
| 4 | C |





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# SAFETY PRECAUTIONS [TM-A14PN]

1. The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.

2. Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.

3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (⚠) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards.

4. **Don't short between the LIVE side ground and ISOLATED (NEUTRAL) side ground or EARTH side ground when repairing.**
   Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND, the ISOLATED(NEUTRAL) : (⏚) side GND and EARTH : (⏚) side GND. Don't short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND at the same time.
   If above note will not be kept, a fuse or any parts will be broken.

5. If any repair has been made to the chassis, it is recommended that the B1 setting should be checked or adjusted (See ADJUSTMENT OF B1 POWER SUPPLY).

6. The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approved by the manufacturer of the complete product.

7. Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10kΩ 2W resistor to the anode button.

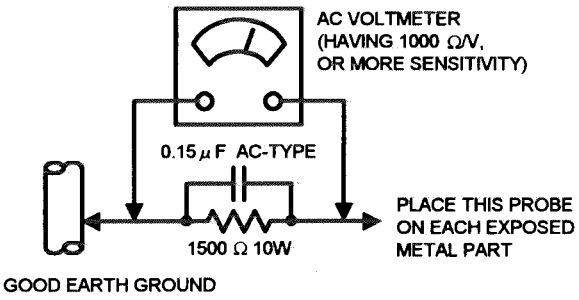
8. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.

9. **Isolation Check**
   **(Safety for Electrical Shock Hazard)**
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

(1) **Dielectric Strength Test**
The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 3000V AC (r.m.s.) for a period of one second.
(. . . . Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)
This method of test requires a test equipment not generally found in the service trade.

(2) **Leakage Current Check**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.2mA AC (r.m.s.).

● **Alternate Check Method**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000 ohms per volt or more sensitivity in the following manner. Connect a 1500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.3V AC (r.m.s.). This corresponds to 0.2mA AC (r.m.s.).



# SAFETY RPECAUTIONS [TM-A14PN-K]

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2. Alterations of the design or circuitry of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.

3. Many electrical and mechanical parts in the product have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessary be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the Parts List of Service Manual may cause shock, fire, or other hazards.

4. The leads in the products are routed and dressed with ties, clamps, tubing's, barriers and the like to be separated from live parts, high temperature parts, moving parts and / or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.

# WARNING

1. The equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

# MAIN DIFFERENCE LIST

| ⚠ | PARTS No. | | PARTS NAME | Description |
|---|---|---|---|---|
| | TM-A14PN | TM-A14PN-K | | |
| ⚠ | AEM2045-001-E | AEM2041-003-E | RATING LABEL | EXPLODED VIEW PARTS LIST |
| ⚠ | QMPL040-200-JC | QMPP010-200-JC | POWER CORD | PACKING PARTS LIST |
| | AEM1038-071-E | AEM1038-072-E | EURO LABEL | PACKING PARTS LIST |
| ⚠ | LCT0068-001A-U | LCT0069-001A-U | INST BOOK | PACKING PARTS LIST |
| | LC20037-001A-U | × | X-RAY CARD | PACKING PARTS LIST |

# SPECIFIC SERVICE INSTRUCTIONS

## DISASSEMBLY PROCEDURE

**[CAUTION]**

* Even with the power switch off, some parts of the set are live. Be sure to disconnect the power cord from the AC outlet before disassembly and reassembly.

### REMOVING THE REAR COVER

1. Remove the 8 screws marked Ⓐ as shown in the figure.
2. Withdraw the rear cover toward you.

### REMOVING THE PW BOARD

- Remove the rear cover.

1. Slighty raise the both sides of the PW board by hand and remove the claw under the terminal bracket from the front cabinet.
2. Withdraw the PW board backward.
   (If necessary, take off the wire clamp, connectors etc.)

### REMOVING THE TERMINAL BRACKET

- Remove the rear cover.

1. Remove the 4 screws marked Ⓑ .
2. Withdraw the terminal bracket rearward.

### REMOVING THE SPEAKER

- Remove the PW board.

1. Remove the claw securing the speaker under the front cabinet and pull out the speaker (Fig.1).

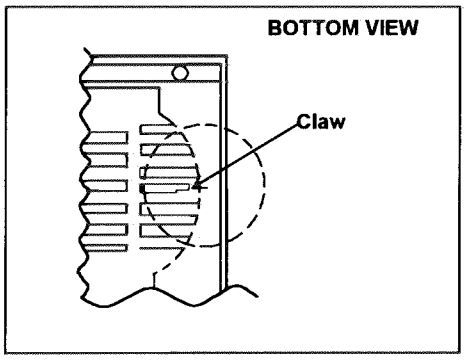



**Fig. 1**

### CHECKING THE PW BOARD

To check the back side of the PW board.

(1) Pull out the PW board.

(2) Erect the chassis vertically so that you can easily check the back side of the PW board.

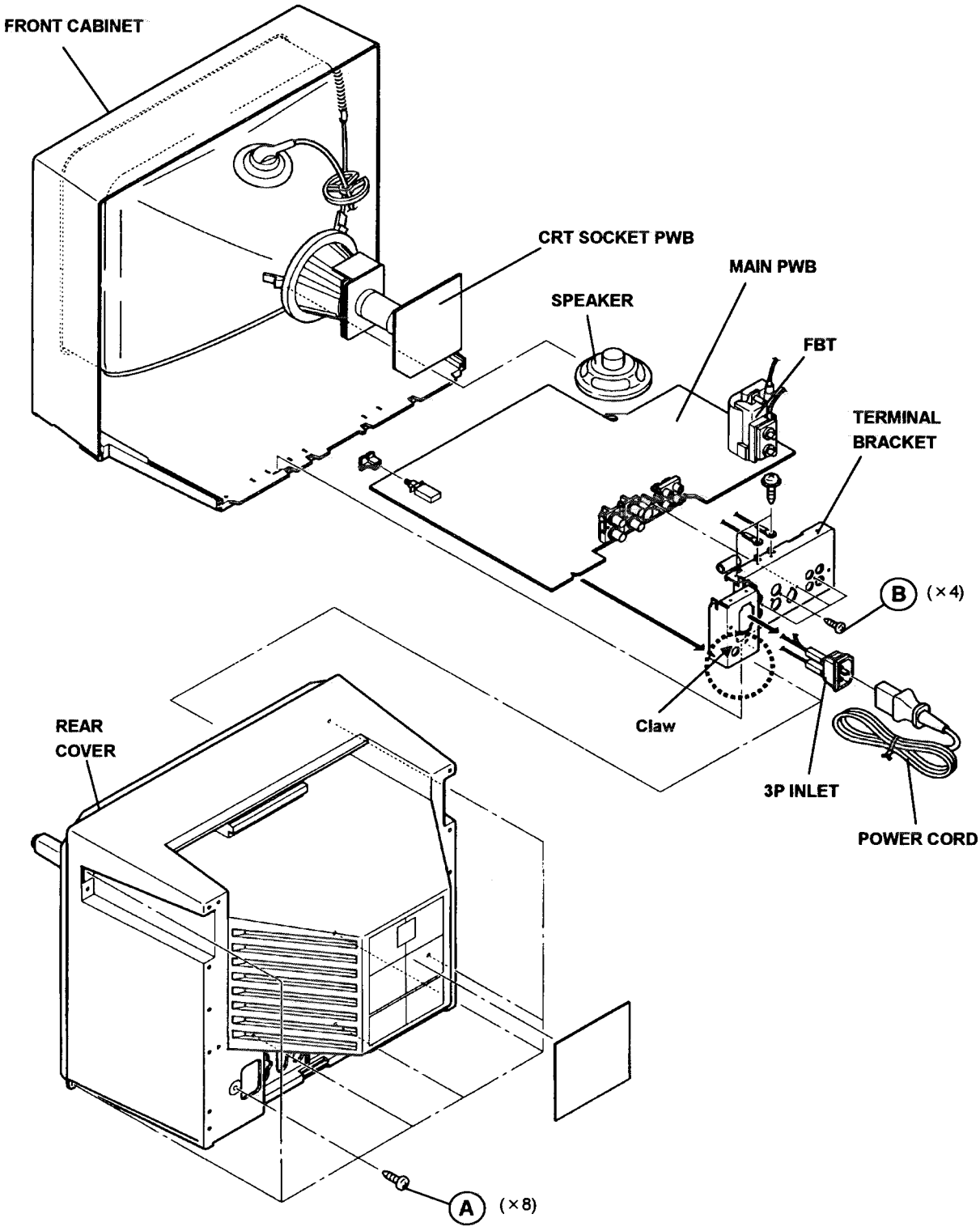
**[CAUTION]**

* When erecting the PW board, be careful so that there will be no contacting with other PW board.

* Before turning on power, make sure that the CRT earth wire and other connectors are properly connected.

### WIRE CLAMPING AND CABLE TYING

1. Be sure to clamp the wire.
2. Never remove the cable tie used for tying the wires together. Should it be inadvertently removed, be sure to tie the wires With a new cable tie.


FRONT CABINET
CRT SOCKET PWB
MAIN PWB
SPEAKER
FBT
TERMINAL
BRACKET
B (×4)
Claw
REAR
COVER
3P INLET
POWER CORD
A (×8)

# MEMORY IC REPLACEMENT NOTES

## MEMORY IC

This model uses a memory IC(EEP-ROM ICs). In the memory IC are memorized data for correctly operating the video and deflection. The micro computer provides a function by which the initial setting values are entered into the memory IC. Therefore, when replacing the memory IC, a memory without initial setting values can be used. If the memory IC is replaced, the data must be entered into the new memory IC as described below.

## PROCEDURE FOR REPLACING MEMORY IC

**(1) Power off**

Switch the power off and unplug the power code from the wall outlet.

**(2) Replace IC**

**(3) Enter the data into new memory IC**

1)When the power is turned on, the DATA LOAD screen as shown in Fig.1 will be displayed.

2)Press the <CONTRAST> button on the front panel of the cabinet.

3)The screen as shown in Fig.2 will be displayed.

4)Press the <- (Down)> button on the front side of the cabinet. The data will be entered into the memory IC.

**(4)CONTROL DATA Change**

* After changing the MEMORY IC, change the control data.

1)Enter into the SERVICE MENU. (Refer to the BASIC OPERATION OF THE SERVICE MENU.)

2)Select the CONTROL BLOCK and change the setting values in the following items.

**[Note]**

Don't change the data in other items unless otherwise required.

| Service Number | SETTING VALUES | |
|---|---|---|
| | PREVIOUS | NEW |
| C22 | 013 | **017** |
| C36 | 002 | **004** |

**(5) Check and set SET-UP MENU**

1)Press <MENU> and <PHASE> button simultaneously. The SET-UP MENU screen of Fig.3 will be displayed.

2)Check the values of SET-UP MENU by referring to the table 1 given below. If there is any discrepancy of the values, set the correct values with the button according to the display on the screen.

**SET-UP SETTING VALUES**

| SETTING ITEMS | | INITIAL SETTING VALUES |
|---|---|---|
| H.POSITION | | 00 |
| WHITE BALANCE | CUTOFF(R/G/B) | 00 |
| | DRIVE(R/B) | 00 |
| CONTROL LOCK | | OFF |

**Table 1**

**DATA LOAD MENU SCREEN**

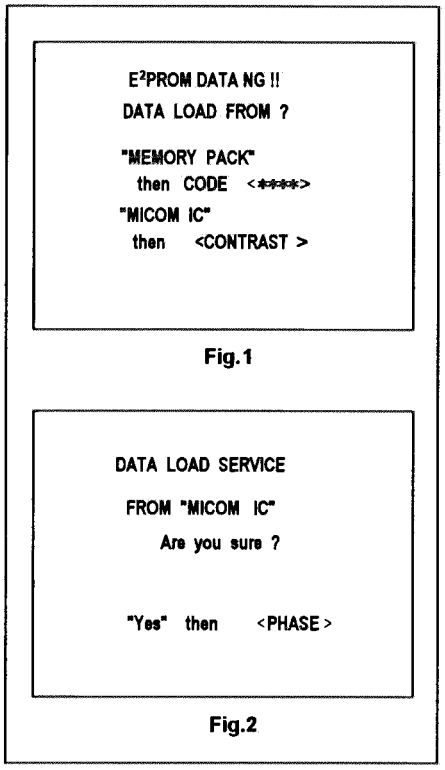



**Fig.1**

**Fig.2**

**SET-UP MENU SCREEN**

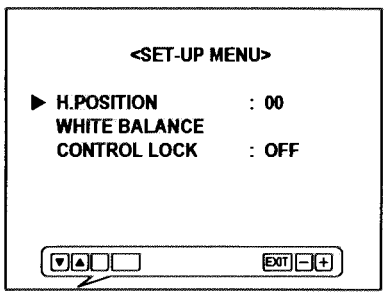



**Fig.3**

**(6) Check and set MENU**

1) Press <MENU> button. The MENU screen of Fig.4 will be displayed.
2) Check the values of MENU refer to the table 2. If there is any discrepancy of the values, set the correct values with the button according to the display on the screen.

**MENU SETTING VALUES**

| SETTING ITEMS | INITIAL SETTING VALUES |
|---|---|
| SHARPNESS | 00 |
| COLOR SYSTEM | AUTO |

**Table 2**

**MENU SCREEN**

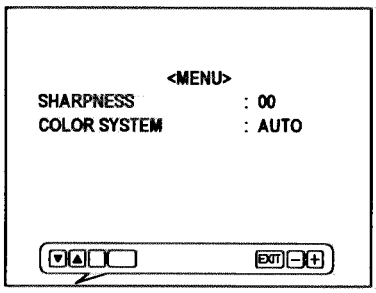



**Fig.4**

**(7) Check and set FRONT CONTROL SETTING VALUES**

1) Press the front panel button (CONTRAST, BRIGHT, CHROMA, PHASE). THE FRONT CONTROL SETTING screen Fig.5 will be displayed.
2) Check the values of FRONT CONTROL SETTING refer to Table 3. If there is any discrepancy of the values, Set the initial setting values <+ with < - > or > button directly.

**FRONT CONTROL SETTING VALUES**

| SETTING ITEMS | INITIAL SETTING VALUES |
|---|---|
| CONTRAST | 00 |
| BRIGHT | 00 |
| CHROMA | 00 |
| PHASE | 00 |

**Table 3**

**FRONT CONTROL SETTING SCREEN**

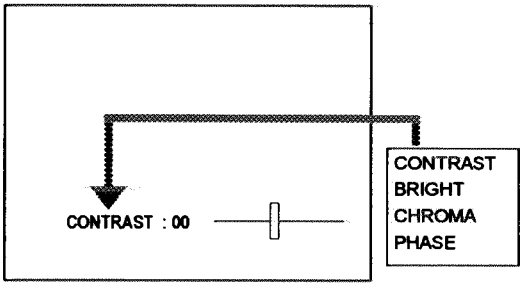



**Fig.5**

# SERVICE MENU SETTING ITEMS

| BLOCK | SERVICE NUMBER | CONTENTS | |
|---|---|---|---|
| 1. SIGNAL BLOCK | S01 | BRIGHT | |
| | S02 | CONTRAST | |
| | S03 | PAL | CHROMA |
| | S04 | NTSC | CHROMA |
| | S05 | SECAM | CHROMA |
| | S06 | NTSC | PHASE |
| 2. WHITE BALANCE BLOCK | W01 | CUTOFF | R |
| | W02 | | G |
| | W03 | | B |
| | W04 | DRIVE | R |
| | W05 | | B |
| 3. DEFLECTION BLOCK | D01 | 50Hz | HORIZONTAL CENTER |
| | D02 | | VERTICAL SIZE |
| | D03 | | V-S. CORRECTION |
| | D04 | | VERTICAL CENTER(Not use) |
| | D05 | | VERTICAL LINEARITY |
| | DA1 | 60Hz | HORIZONTAL CENTER |
| | DA2 | | VERTICAL SIZE |
| | DA3 | | V-S. CORRECTION |
| | DA4 | | VERTICAL CENTER (Not use) |
| | DA5 | | VERTICAL LINEARITY |
| 4. CONTROL BLOCK | C01 | MODEL | |
| | C02 | BRIGHT POINT | UPPER |
| | C03 | | LOWER |
| | C04 | CONTRAST POINT | UPPER |
| | C05 | | LOWER |
| | C06 | CHROMA POINT | UPPER |
| | C07 | | LOWER |
| | C08 | PHASE POINT | UPPER |
| | C09 | | LOWER |
| | C10 | OSD H POSITION | |
| | C11 | OSD V POSITION 50Hz | |
| | C12 | OSD V POSITION 60Hz | |
| | C13 | Y DELAY NTSC VIDEO | |
| | C14 | Y DELAY PAL VIDEO | |
| | C15 | Y DELAY SECAM VIDEO | |
| | C16 | Y DELAY B/W VIDEO | |
| | C17 | Y DELAY NTSC S VIDEO | |
| | C18 | Y DELAY PAL S VIDEO | |
| | C19 | Y DELAY SECAM S VIDEO | |
| | C20 | Y DELAY B/W S VIDEO | |
| | C21 | BRIGHT SERVICE | |
| | C22 | SHARPNESS CENTER | |
| | C23 | VERTICAL GUARD | |
| | C24 | HOUR METER | |
| | C25 | AFC MODE | |
| | C26 | BURST POSITION NTSC/PAL | |
| | C27 | BURST POSITION SECAM | |
| | C28 | COLOUR SYSTEM | |
| | C29 | REMOCON | |
| | C30 | S-FILED | |

| BLOCK | SERVICE NUMBER | CONTENTS |
|---|---|---|
| 4. CONTROL BLOCK | C31 | SCD. ATT |
| | C32 | DEMP. F0 |
| | C33 | V. ID. SW |
| | C34 | S. KILL |
| | C35 | BELL. F0 |
| | C36 | ABL GAIN |
| | C37 | ABL POINT |
| | C38 | C-TRAP SW NTSC |
| | C39 | C-TRAP SW PAL |
| | C40 | C-TRAP Q NTSC |
| | C41 | C-TRAP Q PAL |
| | C42 | C-TRAP F0 NTSC |
| | C43 | C-TRAP F0 PAL |
| | C44 | C-TOF SW NTSC |
| | C45 | C-TOF SW PAL |
| | C46 | C-TOF Q NTSC |
| | C47 | C-TOF Q PAL |
| | C48 | C-TOF F0 NTSC |
| | C49 | C-TOF F0 PAL |
| | C50 | SHARPNESS F0 NTSC VIDEO |
| | C51 | SHARPNESS F0 PAL VIDEO |
| | C52 | SHARPNESS F0 SECAM VIDEO |
| | C53 | SHARPNESS F0 S VIDEO |

# SERVICE ADJUSTMENTS

## BEFORE STARTING SERVICE ADJUSTMENT

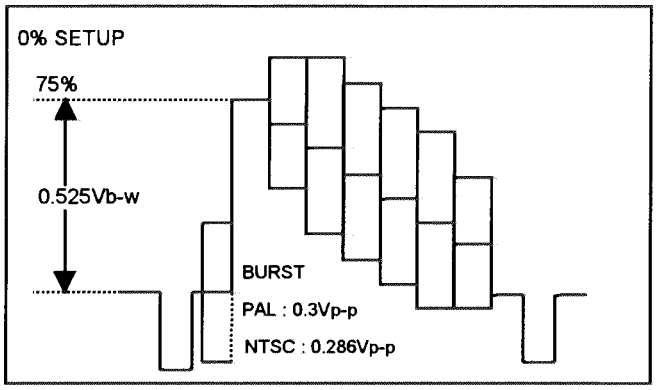
1. Supply power to the set and measuring instruments and allow to warm up for at least 30 minutes.
2. Confirm the proper AC power voltage is being supplied.
3. The setting is made on basis of the initial setting values. The setting values which adjust the screen to the optimum condition can be different from the initial setting values.
4. Use care not to disturb controls and switches not mentioned in the adjustment items.
5. Refer to adjustment settings and set user operated controls (BRIGHT, CONTRAST, PHASE, CHROMA, etc.) to the indicated positions.

## MEASUREING INSTRUMENTS AND FIXTURES

- DC voltmeter (digital voltmeter)
- Oscilloscope
- Signal generator (PAL/NTSC systems)
  - Colour bar and split color bar patterns
  - Crosshatch pattern
  - Cross pattern
  - Red raster pattern
  - Green raster pattern
  - Blue raster pattern
  - Philips pattern (including R-Y and B-Y)
  - TV resolution pattern
  - The wave form of signals refer following figue.
- Colour analyzer
- High voltage meter

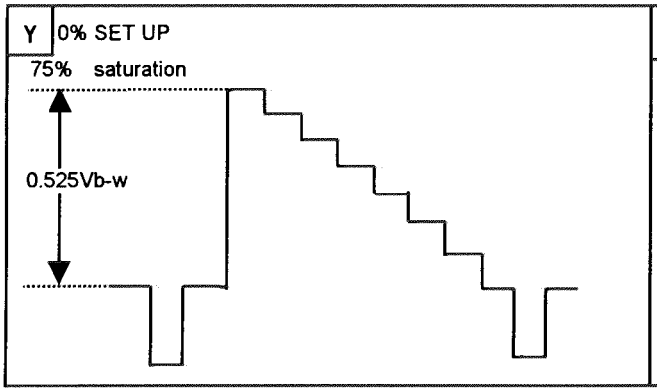
### VIDEO SIGNAL

● COLOUR BAR (PAL / NTSC) SIGNAL

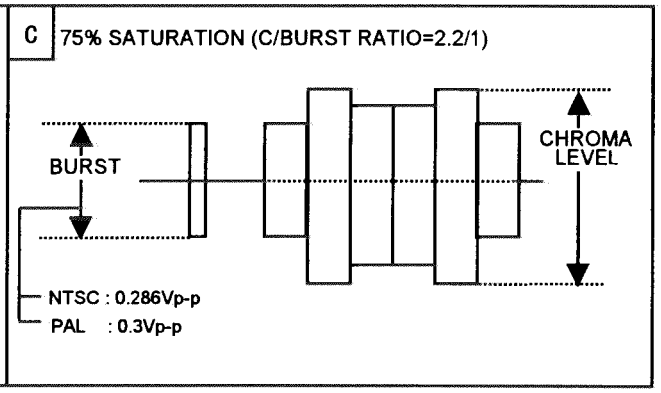



### Y/C SEPARATE SIGNAL

● COLOUR BAR SIGNAL




● COLOUR BAR SIGNAL



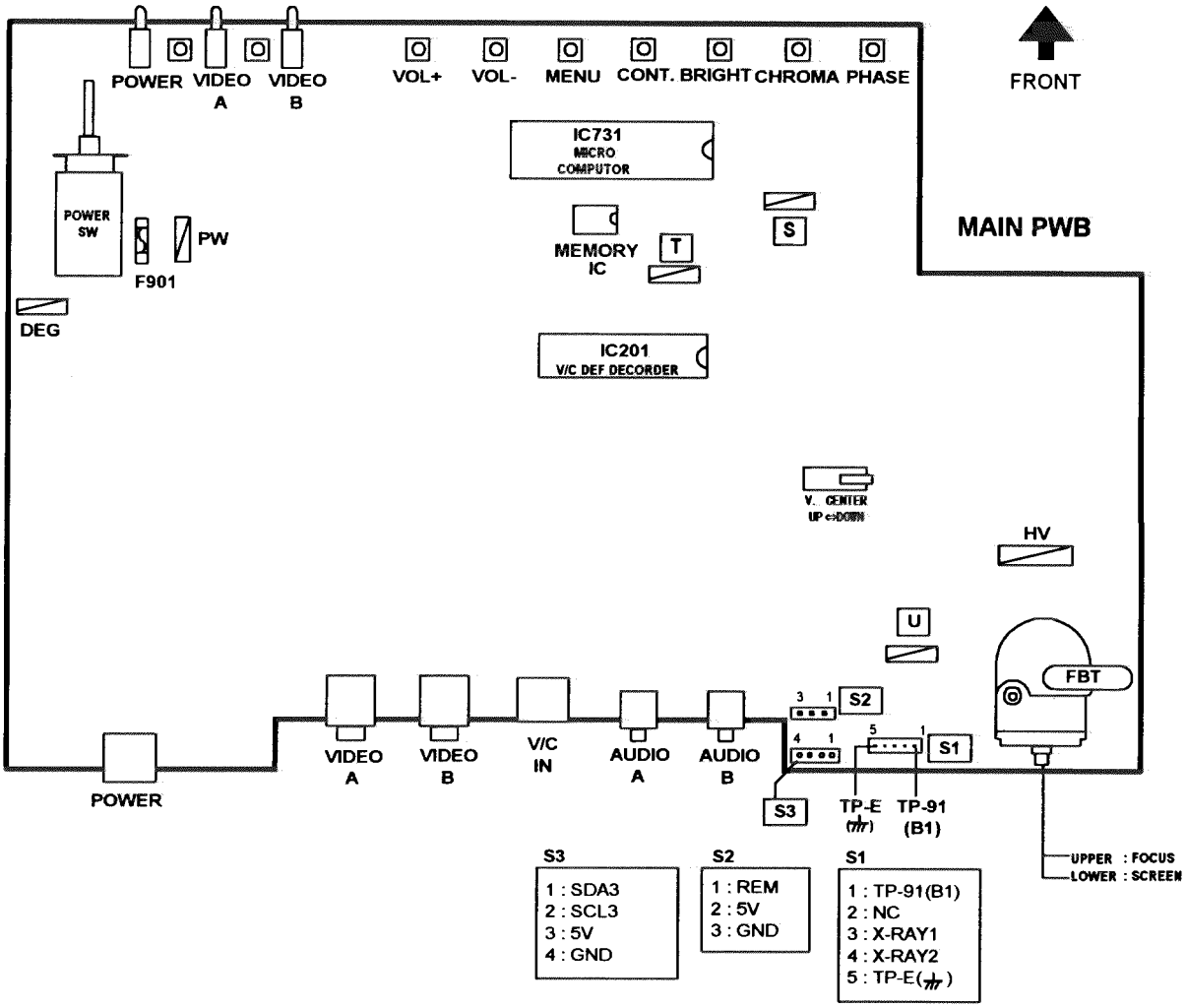
# ADJUSTMENT SETTINGS

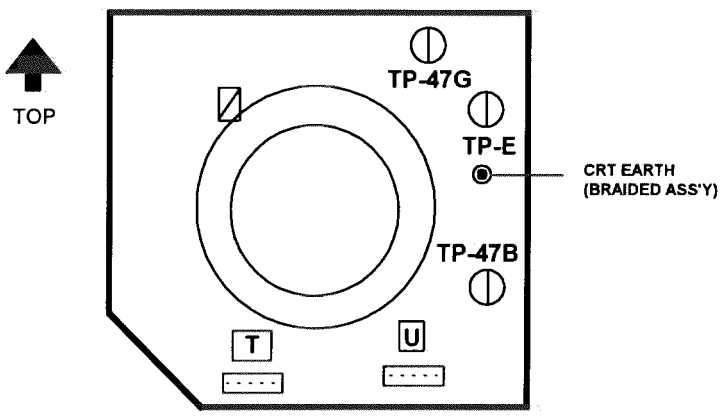
1. **Front controls**
   PHASE ····· 00 (NTSC only)
   CHROMA ····· 00
   BRIGHT ····· 00
   CONTRAST ····· 00
   VOLUME ····· 20

2. **Front switches**
   INPUT SELECT ····· VIDEO A

3. **MENU screen**
   SHARPNESS ····· 00
   COLOUR SYSTEM ····· AUTO

# ADJUSTMENT LOCATIONS




**CRT SOCKET PWB (SOLDER SIDE)**
**(Within MAIN PWB)**

# BASIC OPERATION OF THE SERVICE MENU

## 1. SERVICE MENU ITEMS

With the SERVICE MENU, various settings can be made, and they are broadly classified in the following items of adjustments.

**Don't change the values, If not to necessary.**

**SIGNAL BLOCK** ····· This mode adjusts the data of the various signal voltage controls.
**WHITE BALANCE BLOCK** ····· This mode adjusts the data of the WHITE BALANCE adjustment.
**DEFLECTION BLOCK** ····· This mode adjusts the data of the DEFLECTION circuit.
**CONTROL BLOCK** ····· This mode adjusts the whole of the systems

## 2. BASIC OPERATION OF THE SERVICE MENU

### (1) HOW TO ENTER THE SERVICE MAIN MENU

① Press **MENU** key and **CONTRAST** key simultaneously.
② The letter "S" appears at the upper left of the screen.(Fig.1)
③ While "S" is displayed, press **MENU** key and **PHASE** key simultaneously.
④ The screen display "PLEASE DON'T TOUCH".(Fig.2)
⑤ While "PLEASE DON'T TOUCH" is displayed, press + key or - key to display the SERVICE MAIN MENU as shown in Fig.3.

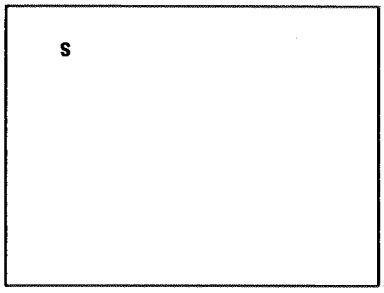



Fig.1

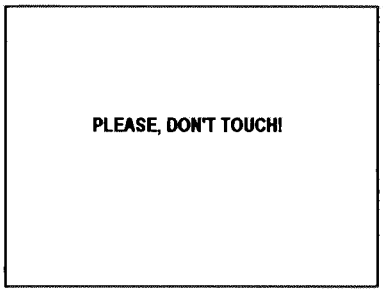



Fig.2

**NOTE**

If step ④ state continues for more than 5 seconds without a further operation, the display extinguishes and the mode is released.

### (2) SELECT OF SUB MENU SCREEN

- While the SERVICE MAIN MENU is displayed.
  In accordance with the key control display at the lower side of the screen, operate the various items.
  **SIGNAL BLOCK** ..... Press the **PHASE** key
  **WHITE BALANCE BLOCK** ..... Press the **CHROMA** key
  **DEFLECTION BLOCK** ..... Press the **BRIGHT** key
  **CONTROL BLOCK** ..... Press the **CONTRAST** key

**SERVICE MAIN MENU**

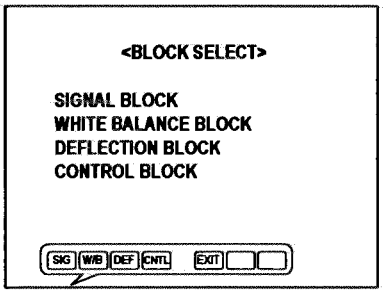



Fig.3

### (3) SETTING VALUE CHANGES

- While the adjustment mode menu is displayed.(Fig.4)

① Press the +key or -key to change the setting value.
② Press the **PHASE** or **CHROMA** key to change the adjustment items.

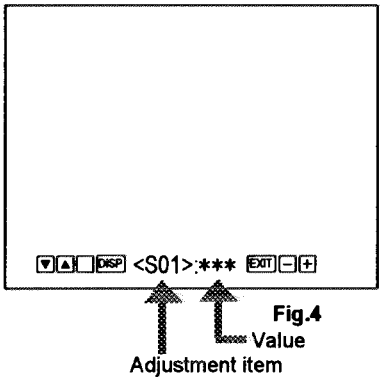



Fig.4

### (4) SERVICE MENU EXIT

① When settings are completed, press **MENU** key.
② The SERVICE MAIN MENU returns.
③ Again press **MENU** key.
④ The screen display extinguishes and the SERVICE MENU is exited.

### 3. HOW TO OPERATE SERVICE MENU ITEMS

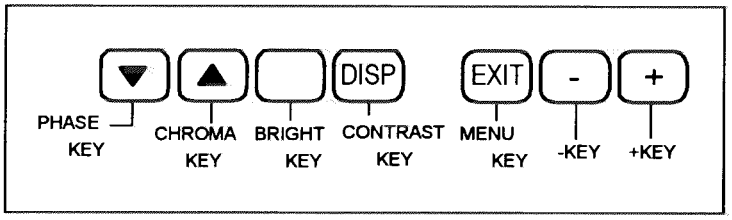
■ **SIGNAL BLOCK**

① Press the **PHASE** key from the <BLOCK SELECT> screen (SERVICE MAIN MENU).

② Then displays the SIGNAL BLOCK adjustment screen (Fig.5)

③ The select item is shown by the SERVICE Number at the lower of the screen.

④ Key control operation are displays as same as the screen lower. The key operations of this mode are following as shown below.




**NOTE**

**CONTRAST** key is the switch of the screen display. If necessary, you can shut off the display. Carefully, values of SERVICE MENU adjustment items are changed while shut off the screen display.

⑤ Press the **MENU** key, then exit from the SIGNAL BLOCK screen to return to the <BLOCK SELECT> screen.

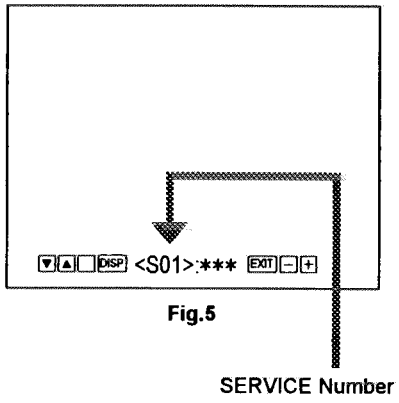
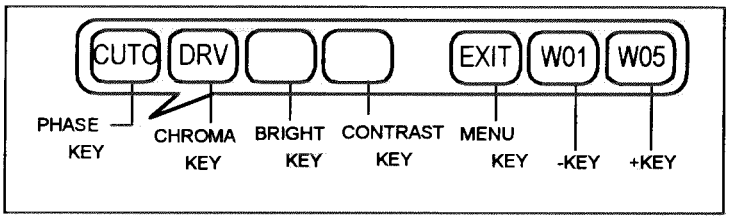



**Fig.5**

■ **WHITE BALANCE BLOCK**

① Press the **CHROMA** key from the <BLOCK SELECT> screen (SERVICE MAIN MENU).

② Then screen displays the WHITE BALANCE BLOCK adjustment screen (Fig.6)




③ The select item is shown by the SERVICE Number at the lower of the screen.

④ Press the **MENU** key few times, then exit from the WHITE BALANCE BLOCK screen to return to the <BLOCK SELECT> screen.

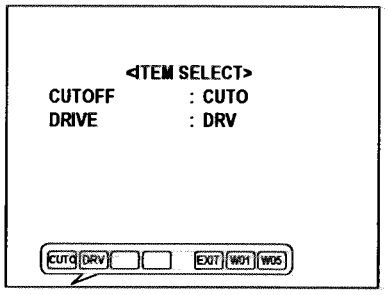


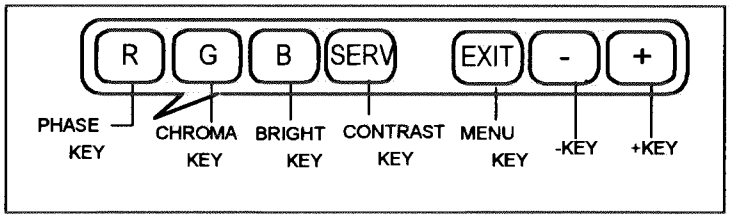

**Fig.6**

**[ WHITE BALANCE Adjustment : METHOD 1 ]**

Accordance with the screen, select the WHITE BALANCE mode that following below.

- **CUTOFF adjustment mode (LOW LIGHT)**

  Press the **PHASE** key, then enter the CUTOFF adjustment mode as shown in Fig.7 (LOW LIGHT adjustment mode). In this case, key control is changed as shown below.



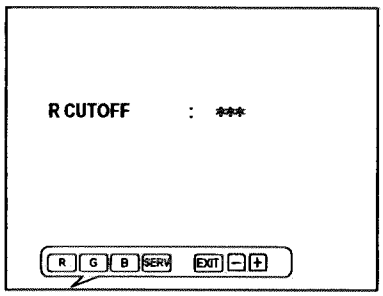
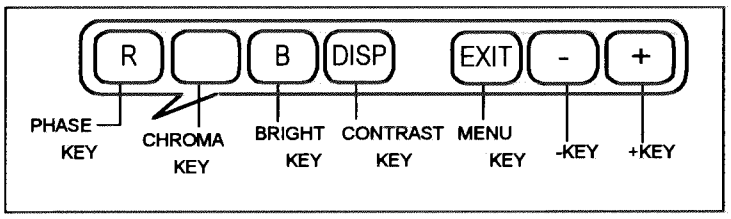




**Fig.7**

  Press key of the SERV displaying. Shown **ONE HORIZONTAL LINE** on or off.

- **DRIVE adjustment mode (HIGH LIGHT)**

  Press the **CHROMA** key, then enter the DRIVE adjustment mode as shown in Fig.8 (HIGH LIGHT adjustment mode). In this case, key control is changed as shown below.



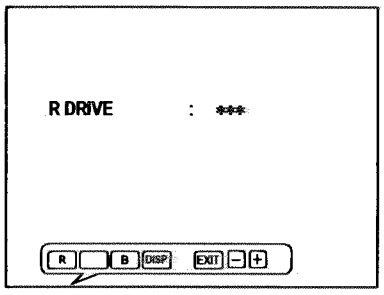
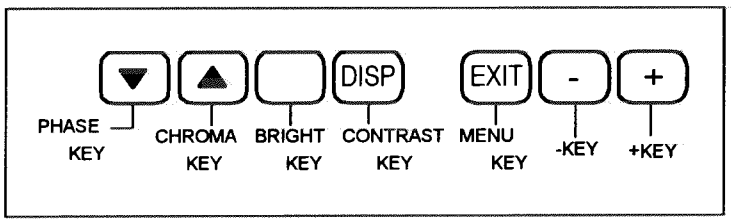




**Fig.8**

**[ WHITE BALANCE Adjustment : METHOD 2 ]**

Accordance with the screen, select the WHITE BALANCE mode that following below.

Press the +key or -key, then enter the WHITE BALANCE full adjustment mode as shown in Fig.9 (this mode both LOW LIGHT and HIGH LIGHT are able to adjust). In this case, key control is changed as shown below. The operation of this mode is as same as SIGNAL BLOCK adjustment operation.



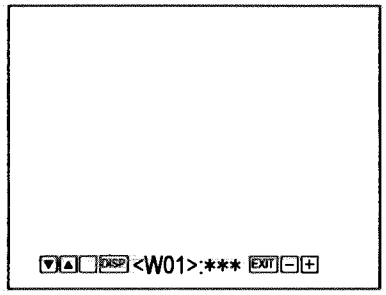




**Fig.9**

## ■ DEFLECTION BLOCK

① Press the **BRIGHT** key from the <BLOCK SELECT> screen (SERVICE MAIN MENU).
② Then screen displays the DEFLECTION BLOCK adjustment screen (Fig.10).
③ The select item is shown by the SERVICE Number at the lower of the screen.
④ The adjustment screen changes by case of the signal that use for adjustment (Vertical frequency).

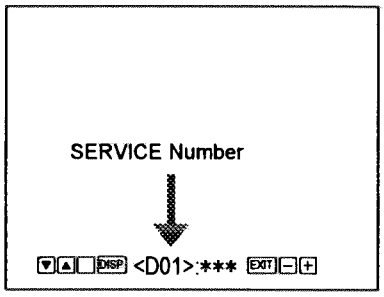
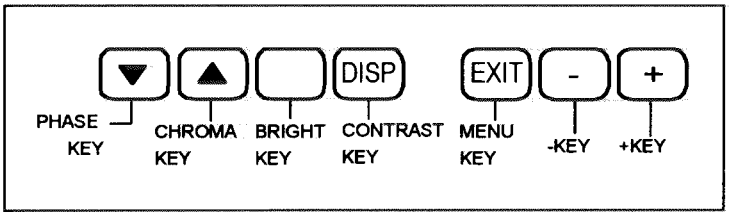



**Fig.10**

| SIGNAL | SCREEN DISPLAY |
|---|---|
| 50Hz | <D0?> |
| 60Hz | <DA?> |

Key control operation are displays as same as the screen lower. The key operations of this mode are following as shown below.




**NOTE**

**CONTRAST** key is the switch of the screen display. If necessary, you can shut off the display. Carefully, values of SERVICE MENU adjustment items are changed while shut off the screen display.

## ■ CONTROL BLOCK (Don't change the values, if not to necessary).

① Press the **CONTRAST** key from the <BLOCK SELECT> screen (SERVICE MAIN MENU).
② Then screen displays the CONTROL BLOCK adjustment screen (Fig.11)
③ The select item is shown by the SERVICE Number at the lower of the screen.
④ Key control operation are displays as same as the screen lower. The key operations of this mode are following as shown below.

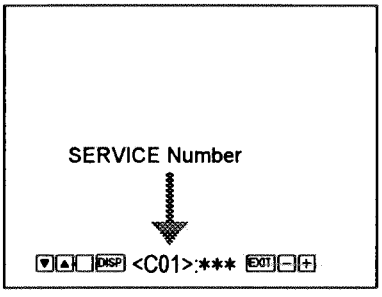
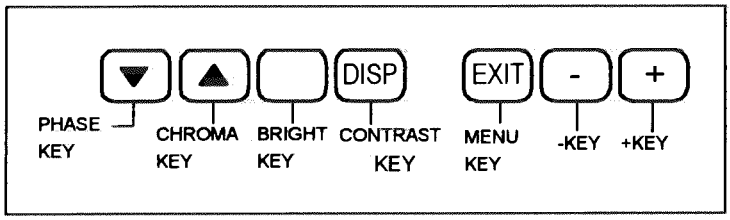
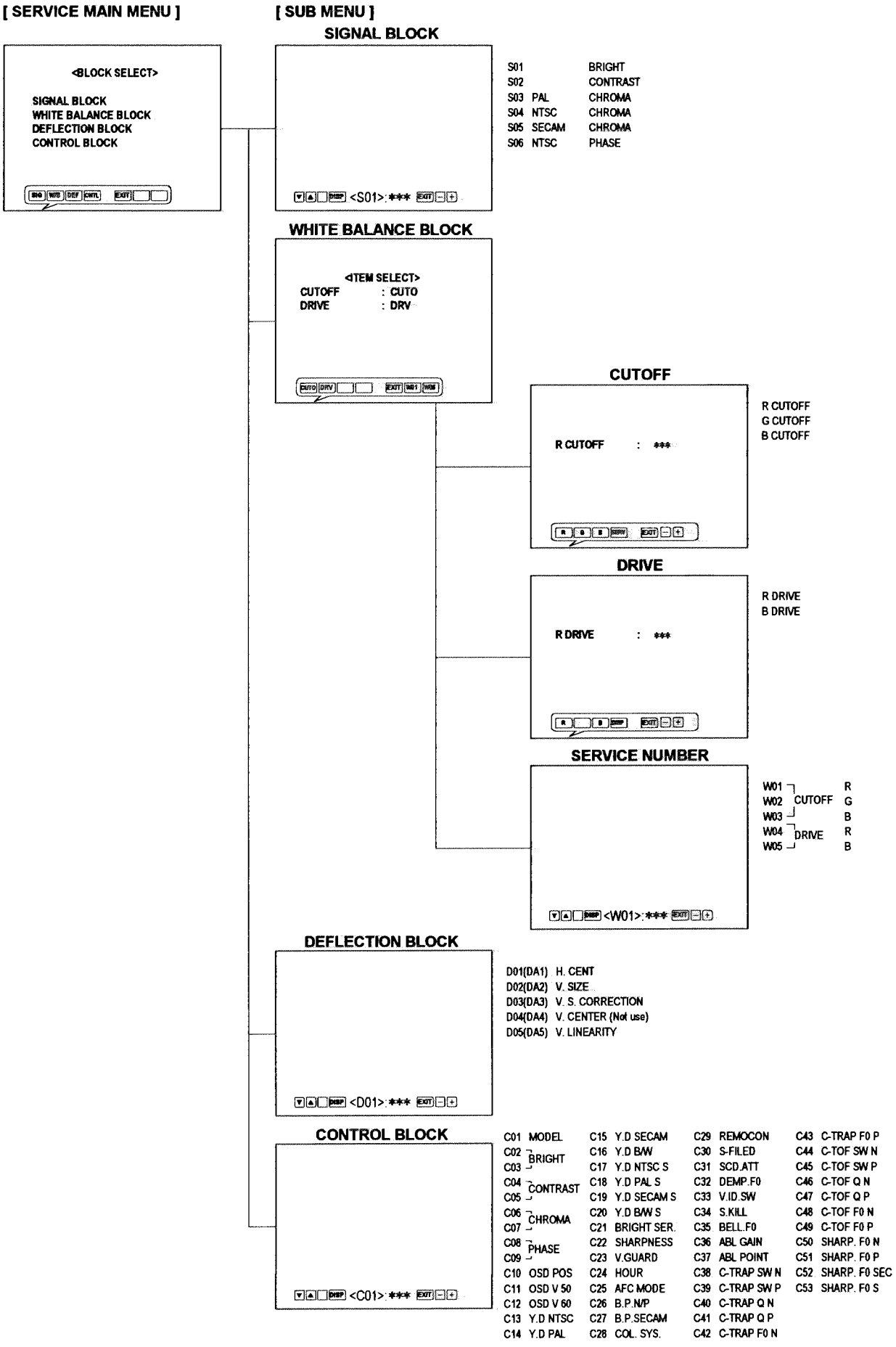



**Fig.11**




[ SERVICE MAIN MENU ]
<BLOCK SELECT>
SIGNAL BLOCK
WHITE BALANCE BLOCK
DEFLECTION BLOCK
CONTROL BLOCK
[ SUB MENU ]
SIGNAL BLOCK
<S01>:***
S01 BRIGHT
S02 CONTRAST
S03 PAL CHROMA
S04 NTSC CHROMA
S05 SECAM CHROMA
S06 NTSC PHASE
WHITE BALANCE BLOCK
<ITEM SELECT>
CUTOFF : CUTO
DRIVE : DRV
CUTOFF
R CUTOFF : ***
R CUTOFF
G CUTOFF
B CUTOFF
DRIVE
R DRIVE : ***
R DRIVE
B DRIVE
SERVICE NUMBER
<W01>:***
W01 W02 W03 CUTOFF R G B
W04 W05 DRIVE R B
DEFLECTION BLOCK
<D01>:***
D01(DA1) H. CENT
D02(DA2) V. SIZE
D03(DA3) V. S. CORRECTION
D04(DA4) V. CENTER (Not use)
D05(DA5) V. LINEARITY
CONTROL BLOCK
<C01>:***
C01 MODEL
C02 C03 BRIGHT
C04 C05 CONTRAST
C06 C07 CHROMA
C08 C09 PHASE
C10 OSD POS
C11 OSD V 50
C12 OSD V 60
C13 Y.D NTSC
C14 Y.D PAL
C15 Y.D SECAM
C16 Y.D B/W
C17 Y.D NTSC S
C18 Y.D PAL S
C19 Y.D SECAM S
C20 Y.D B/W S
C21 BRIGHT SER.
C22 SHARPNESS
C23 V.GUARD
C24 HOUR
C25 AFC MODE
C26 B.P.N/P
C27 B.P.SECAM
C28 COL. SYS.
C29 REMOCON
C30 S-FILED
C31 SCD.ATT
C32 DEMP.F0
C33 V.ID.SW
C34 S.KILL
C35 BELL.F0
C36 ABL GAIN
C37 ABL POINT
C38 C-TRAP SW N
C39 C-TRAP SW P
C40 C-TRAP Q N
C41 C-TRAP Q P
C42 C-TRAP F0 N
C43 C-TRAP F0 P
C44 C-TOF SW N
C45 C-TOF SW P
C46 C-TOF Q N
C47 C-TOF Q P
C48 C-TOF F0 N
C49 C-TOF F0 P
C50 SHARP. F0 N
C51 SHARP. F0 P
C52 SHARP. F0 SEC
C53 SHARP. F0 S

# ■ INITIAL SETTINGS OF THE SERVICE MENU ADJUSTMENT ITEMS

## SIGNAL BLOCK

| SERVICE Number | ITEMS | | VARIABLE RANGE | INITIAL VALUE | DESCRIPTION |
|---|---|---|---|---|---|
| S01 | BRIGHT | | 000 ~ 255 | 150 | Avairable |
| S02 | CONTRAST | | 000 ~ 255 | 070 | |
| S03 | CHROMA | PAL | 000 ~ 255 | 135 | |
| S04 | | NTSC | 000 ~ 255 | 135 | |
| S05 | | SECAM | 000 ~ 255 | 135 | |
| S06 | PHASE | | 000 ~ 127 | 065 | |

## WHITE BALANCE BLOCK

| SERVICE Number | ITEMS | | VARIABLE RANGE | INITIAL VALUE | DESCRIPTION |
|---|---|---|---|---|---|
| W01 | CUTOFF | R | 000 ~ 255 | 050 | Avairable |
| W02 | | G | 000 ~ 255 | 050 | |
| W03 | | B | 000 ~ 255 | 050 | |
| W04 | DRIVE | R | 000 ~ 255 | 130 | |
| W05 | | B | 000 ~ 255 | 060 | |

## DEFLECTION BLOCK

| SERVICE Number | ITEMS | | VARIABLE RANGE | INITIAL VALUE | DESCRIPTION |
|---|---|---|---|---|---|
| D01 | 50Hz | HORIZONTAL CENTER | 000 ~ 031 | 007 | Avairable |
| D02 | | VERTICAL | 000 ~ 127 | 050 | |
| D03 | | V-S. CORRECTION | 000 ~ 063 | 031 | |
| D04 | | VERTICAL CENTER | 000 ~ 255 | 127 | Don't touch |
| D05 | | VERTICAL LINEARITY | 000 ~ 031 | 017 | Avairable |
| DA1 | 60Hz | HORIZONTAL CENTER | -128 ~ 000 ~ +127 | (+004) | Avairable |
| DA2 | | VERTICAL | -128 ~ 000 ~ +127 | (-001) | |
| DA3 | | V-S. CORRECTION | -128 ~ 000 ~ +127 | (000) | |
| DA4 | | VERTICAL CENTER | -128 ~ 000 ~ +127 | (000) | Don't touch |
| DA5 | | VERTICAL LINEARITY | -128 ~ 000 ~ +127 | (-004) | Avairable |

## CONTROL BLOCK

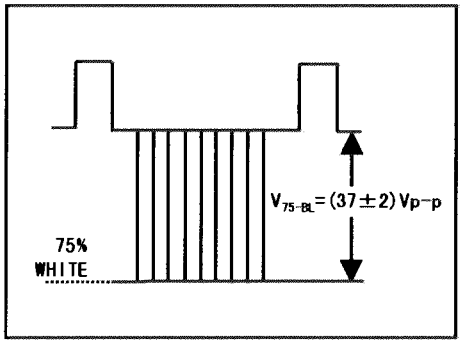
| SERVICE Number | ITEMS | | VARIABLE RANGE | INITIAL VALUE | DESCRIPTION |
|---|---|---|---|---|---|
| C01 | MODEL | | 000 ~ 011 | 006 | Reserve (Don't touch) |
| C02 | BRIGHT POINT | UPPER | 000 ~ 255 | 063 | |
| C03 | | LOWER | 000 ~ 255 | 063 | |
| C04 | CONTRAST POINT | UPPER | 000 ~ 255 | 063 | |
| C05 | | LOWER | 000 ~ 255 | 063 | |
| C06 | CHROMA POINT | UPPER | 000 ~ 255 | 000 | |
| C07 | | LOWER | 000 ~ 255 | 030 | |
| C08 | PHASE POINT | UPPER | 000 ~ 127 | 050 | |
| C09 | | LOWER | 000 ~ 127 | 050 | |
| C10 | OSD HORIZONTAL POSITION | | 000 ~ 015 | 012 | |
| C11 | OSD VERTICAL POSITION 50Hz | | 000 ~ 007 | 005 | |
| C12 | OSD VERTICAL POSITION 60Hz | | 000 ~ 002 | 000 | |
| C13 | Y DELAY NTSC VIDEO | | 000 ~ 007 | 000 | |
| C14 | Y DELAY PAL VIDEO | | 000 ~ 007 | 001 | |
| C15 | Y DELAY SECAM VIDEO | | 000 ~ 007 | 004 | |
| C16 | Y DELAY B/W VIDEO | | 000 ~ 007 | 001 | |
| C17 | Y DELAY NTSC S VIDEO | | 000 ~ 007 | 001 | |
| C18 | Y DELAY PAL S VIDEO | | 000 ~ 007 | 001 | |
| C19 | Y DELAY SECAM S VIDEO | | 000 ~ 007 | 001 | |
| C20 | Y DELAY B/W S VIDEO | | 000 ~ 007 | 001 | |
| C21 | BRIGHT SERVICE | | 000 ~ 255 | 150 | |
| C22 | SHARPNESS CENTER | | 000 ~ 063 | 017 | |
| C23 | VERTICAL GUARD | | 000 ~ 001 | 001 | |
| C24 | HOUR METER | | 000 ~ 650 | 001 | |
| C25 | AFC MODE | | 000 ~ 003 | 000 | |
| C26 | BURST POSITION NTSC/PAL | | 000 ~ 001 | 000 | |
| C27 | BURST POSITION SECAM | | 000 ~ 001 | 000 | |
| C28 | COLOUR SYSTEM SECAM | | 000 ~ 001 | 000 | |
| C29 | REMOCON | | 000 ~ 001 | 000 | |
| C30 | S-FILED | | 000 ~ 001 | 001 | |
| C31 | SCD. ATT | | 000 ~ 001 | 000 | |
| C32 | DEMP. F0 | | 000 ~ 001 | 000 | |
| C33 | V. ID. SW | | 000 ~ 001 | 000 | |
| C34 | S. KILL | | 000 ~ 001 | 000 | |
| C35 | BELL. F0 | | 000 ~ 001 | 000 | |
| C36 | ABL GAIN | | 000 ~ 007 | 004 | |
| C37 | ABL POINT | | 000 ~ 007 | 006 | |
| C38 | C-TRAP SW NTSC | | 000 ~ 001 | 000 | |
| C39 | C-TRAP SW PAL | | 000 ~ 001 | 000 | |
| C40 | C-TRAP Q NTSC | | 000 ~ 003 | 001 | |

| SERVICE Number | ITEMS | VARIABLE RANGE | INITIAL VALUE | DESCRIPTION |
|---|---|---|---|---|
| C41 | C-TRAP Q PAL | 000 ~ 003 | 001 | Reserve (Don't touch) |
| C42 | C-TRAP F0 NTSC | 000 ~ 003 | 002 | |
| C43 | C-TRAP F0 PAL | 000 ~ 003 | 002 | |
| C44 | C-TOF NTSC | 000 ~ 001 | 000 | |
| C45 | C-TOF PAL | 000 ~ 001 | 000 | |
| C46 | C-TOF Q NTSC | 000 ~ 003 | 000 | |
| C47 | C-TOF Q PAL | 000 ~ 003 | 000 | |
| C48 | C-TOF F0 NTSC | 000 ~ 003 | 000 | |
| C49 | C-TOF F0 PAL | 000 ~ 003 | 000 | |
| C50 | SHARPNESS F0 NTSC VIDEO | 000 ~ 003 | 000 | |
| C51 | SHARPNESS F0 PAL VIDEO | 000 ~ 003 | 000 | |
| C52 | SHARPNESS F0 SECAM VIDEO | 000 ~ 003 | 000 | |
| C53 | SHARPNESS F0 S VIDEO | 000 ~ 003 | 000 | |

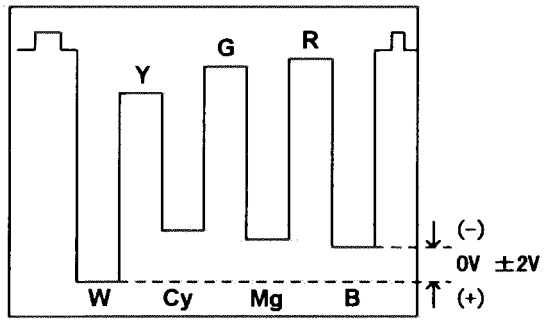
# ■ ADJUSTMENT

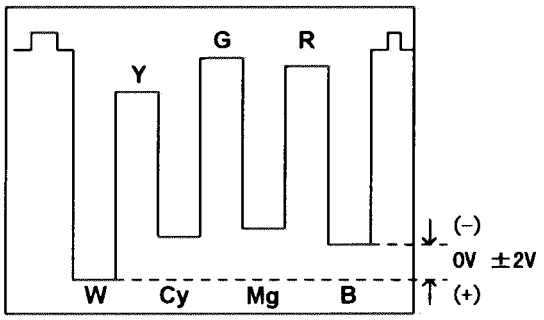
| Item | Test equipment | Test points | Adjustment locations | Adjustment procedure |
|---|---|---|---|---|
| **Check of B1 power supply** | **Voltmeter** | **TP-91(B1):**<br>**S1 ① pin**<br>**TP-E(⏚):**<br>**S1 ⑤ pin**<br>**[MAIN PWB]**<br><br>**SCREEN VR**<br>**[In FBT]** | | 1. Set power supply voltage to 230V.<br>2. Select WHITE BALANCE BLOCK from the SERVICE MAIN MENU.<br>3. Select CUTOFF adjustment mode (LOW LIGHT mode).<br>4. Press "SERV" switch as CONTRAST key, to display the horizontal line.<br>5. Adjust the SCREEN VR to disappear the horizontal line.<br>6. Check the B1 voltage to 114.0V ± 2V.<br>7. Readjust the SCREEN VR to appear the horizontal line faintly, and cancel the horizontal line to press the "SERV" switch. |
| **High voltage check** | **High voltage meter**<br>**Signal generator**<br>**(All-black signal)** | **CRT Anode**<br><br>**SCREEN VR**<br>**[In FBT]** | | 1. Set power supply voltage to 230V.<br>2. Select WHITE BALANCE BLOCK from the SERVICE MAIN MENU.<br>3. Select CUTOFF adjustment mode (LOW LIGHT mode).<br>4. Press "SERV" switch as CONTRAST key, to display the horizontal line.<br>5. Adjust the SCREEN VR to disappear the horizontal line.<br>6. Connect the high voltage meter to the CRT anode and check for 24.0~26.0kV.<br>7. Readjust the SCREEN VR to appear the horizontal line faintly, and cancel the horizontal line to press the "SERV" switch. |
| **Focus adjustment** | **Signal generator**<br>**(Cross-hattch pattern)** | | **FOCUS VR**<br>**[In FBT]** | 1. Adjust the Focus VR for optimum focus where moire is not apparent.<br>2. Darken the picture and adjust the focus by tuning counter-clockwise from the position where focus is poor.<br>3. Alternately repeat the above steps to obtain the optimum position.<br>• Focus can be adjusted easily by displaying the menu. |

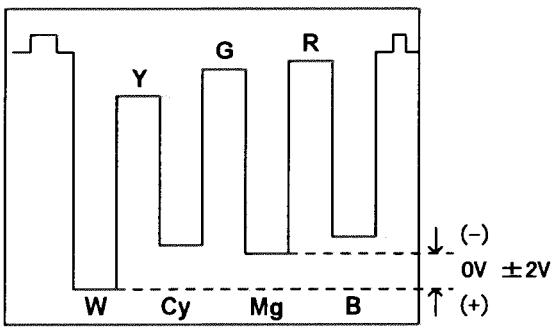
| Item | Test equipment | Test points | Adjustment locations | Adjustment procedure |
|---|---|---|---|---|
| **White balance (Low Light) adjustment** | **Signal generator (Resolution pattern, Colour bar Pattern)** | | **SCREEN VR [In FBT]**<br><br>**W01 (R CUTOFF)**<br>**W02 (G CUTOFF)**<br>**W03 (B CUTOFF)**<br>**[SERVICE MENU]** | 1. Supply the resolution pattern.<br>2. Select the WHITE BALANCE BLOCK from the SERVICE MAIN MENU.<br>3. Select the CUTOFF mode.<br>4. Confirm the values of the R.G.B CUTOFF are the 50.<br>5. Press "SERV" switch as CONTRAST key, to display the horizontal line. Carefully adjust the SCREEN VR to horizontal line appears faintly, not to shine it much.<br>6. Gradually turn the SCREEN VR clockwise to bring one of the red, green and blue colours faintly visible.<br>7. Then select the CUTOFF switch (R, G or B) that colour except for appears first, and adjusting 2 colours CUTOFF values by pressing the +key, and make horizontal line visible white.<br>8. Readjust the SCREEN VR to appear the horizontal line faintly, and cancel the horizontal line to press the "SERV" switch. |
| **White balance (Hight Light) adjustment** | **Signal generator (Resolution pattern)**<br><br>**Colour Analyzer or Colour temperature meter** | | **W04 (R DRIVE)**<br>**W05 (B DRIVE)**<br>**[SERVICE MENU]** | 1. Supply the resolution pattern.<br>2. Select the WHITE BALANCE BLOCK from the SERVICE MAIN MENU.<br>3. Select the DRIVE mode.<br>4. Apply the sensor of the Colour temperature meter to the CRT surface, part of the 100% white, adjust the R drive or B drive to setting 6500K (x=0.313, y=0.329).<br>5. Exit the SERVICE MENU by pressing the MENU key.<br>6. Check the white balance tracking is optimum when CONTRAST and BRIGHT are up and down. |

| Item | Test equipment | Test points | Adjustment locations | Adjustment procedure |
|---|---|---|---|---|
| **Bright adjustment** | **Signal generator (Sprit colour bar)** | | **S01 (BRIGHT) [SERVICE MENU]** | 1. Supply a sprit colour bar signal.<br>2. Select the SIGNAL BLOCK from the SERVICE MAIN MENU.<br>3. Select the <S01> item.<br>4. Adjust <S01> to where the sprit colour bar 0% black component faintly brightens.<br>5. Check it to on and off the screen display by turning the "DISP" switch. |
| **Contrast adjustment** | **Signal generator (Cross-hattch)**<br>**Oscillo-scope**<br>  <br> | **TP-47G**<br>**TP-E(⏚)**<br>**[CRT SOCKET PWB]** | **S02 (CONTRAST) [SERVICE MENU]** | 1. Supply a cross-hattch signal. (level 75%)<br>2. Connect the oscillo-scope probe to TP-47G and TP-E(⏚).<br>3. Select the SIGNAL BLOCK from SERVICE MAIN MENU.<br>4. Select the <S02> item.<br>5. Adjust <S02> to set the waveform level to (37± 2)Vp-p as shown in figure. |

| Item | Test equipment | Test points | Adjustment locations | Adjustment procedure |
|---|---|---|---|---|
| **PAL CHROMA adjustment** | **Signal generator (Colour bar)**<br><br>**Oscillo-scope** | **TP-47B**<br>**TP-E(⏚)**<br>**[CRT SOCKET PWB]** | **S03**<br>**(PAL CHROMA)**<br>**[SERVICE MENU]** | 1. Supply a PAL colour bar signal.<br>2. Connect the oscillo-scope probe to TP-47B and TP-E(⏚).<br>3. Select the SIGNAL BLOCK from SERVICE MAIN MENU.<br>4. Select the <S03> item.<br>5. Adjust the <S03> to take the level difference in waveform is 0V±2V as shown in figure. |
| **NTSC CHROMA adjustment** | **Signal generator (Colour bar)**<br><br>**Oscillo-scope** | **TP-47B**<br>**TP-E(⏚)**<br>**[CRT SOCKET PWB]** | **S04**<br>**(NTSC CHROMA)**<br>**[SERVICE MENU]** | 1. Supply a NTSC 3.58 colour bar signal.<br>2. Connect the oscillo-scope probe to TP-47B and TP-E(⏚).<br>3. Select the SIGNAL BLOCK from SERVICE MAIN MENU.<br>4. Select the <S04> item.<br>5. Adjust the <S04> to take the level difference in waveform is 0V±2V as shown in figure. |
| **NTSC PHASE adjustment** | **Signal generator (Colour bar)**<br><br>**Oscillo-scope** | **TP-47B**<br>**TP-E(⏚)**<br>**[CRT SOCKET PWB]** | **S06 (NTSC PHASE)**<br>**[SERVICE MENU]** | 1. Supply a NTSC 3.58 colour bar signal.<br>2. Connect the oscillo-scope probe to TP-47B and TP-E(⏚).<br>3. Select the SIGNAL BLOCK from SERVICE MAIN MENU.<br>4. Select the <S06> item.<br>5. Adjust the <S06> to take the level difference in waveform is 0V±2V as shown in figure. |



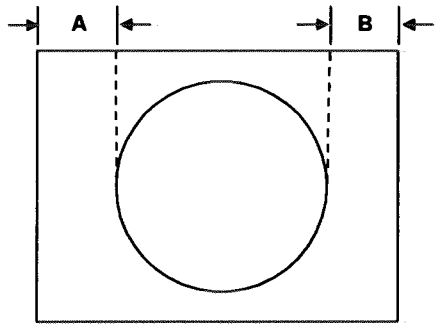
# DEFLECTION CIRCUIT ADJUSTMENT

- There are 2 modes of DEFLECTION ADJUSTMENT — ① 50Hz and ② 60Hz — depending upon the kind of input signals (VERTICAL FREQUENCY 50Hz/60Hz).

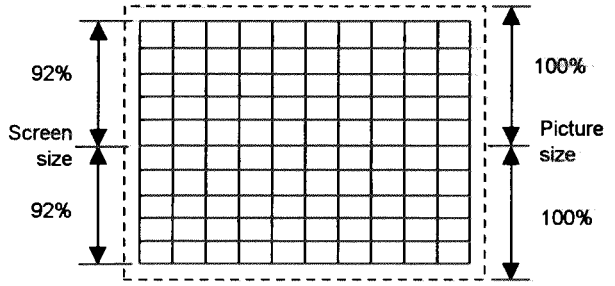
  * When adjusted in the ① 50Hz mode, the ② 60Hz mode will be linked to the mode ① and will be automatically adjusted for the same value.
  * When adjusted in the ② 60Hz mode, only this mode will be adjusted singly.

  **NOTE**
  Adjustments for VERTICAL FREQUENCY shall always be carried out in regular order : ① 50Hz →② 60Hz.

| Item | Test equipment | Test points | Adjustment locations | Adjustment procedure |
|---|---|---|---|---|
| **H.CENTER adjustment** | **Signal generator (Circle pattern)** | | **D01 (H.CENTER) [SERVICE MENU]** | 1. Supply a PAL (50Hz) circle pattern signal.<br>2. Select DEFLECTION BLOCK from SERVICE MAIN MENU.<br>3. Select <D01> item.<br>4. Adjust <D01> to align the picture center with the CRT center. (A=B) |



| Item | Test equipment | Test points | Adjustment locations | Adjustment procedure |
|---|---|---|---|---|
| **V.SIZE adjustment** | **Signal generator (Cross-hatch pattern)** | | **D02 (V.SIZE) [SERVICE MENU] V.CENTER SW [ON MAIN PWB]** | 5. Set the vertical center to go best position by selecting the V.CENTER SW.<br>6. Select <D02> item.<br>7. Adjust <D02> to set vertical size to 92% |
| **V-S. CR V-LINE adjustment** | **Signal generator (Cross-hatch pattern)** | | **D03 (V-S correction) D05 (V-LINEARITY)** | 8. Select <D03> and <D05> item.<br>9. Adjustment <D03> and <D05> to distance of each horizontal lines are equal.<br>10. If necessory, repeat abov (5)~(9). |
| | | | | Make sure that the adjustments is properly done on the screen of 60Hz. If screen of the deflection adjustment is not optimum in 60Hz mode, adjust the deflection setting. |



# SELF DIAGNOSIS FUNCTION

## 1. OUTLINE

This model includes a SELF DIAGNOSIS FUNCTION that checks the circuit operating status and in event of malfunction, displays and stores the data in a memory. The data are stored in an I²C memory.

Fault detection starts with the I²C bus and is performed according to the input states of the control lines connected to the MAIN CPU.

## 2. USAGE

**SELF DIAGNOSIS FUNCTION mode entry**

(1) While press the MENU key and CHROMA key simultaneously, and push the MAIN POWER switch on.

(2) Then displays the SELF DIAGNOSIS FUNCTION screen. The screen display as shown Fig.1 and the SELF DIAGNOSIS FUNCTION mode is entered. If in event a malfunction at RASTER not display, at this time POWER LED or POWER & VIDEO A LED flashes.

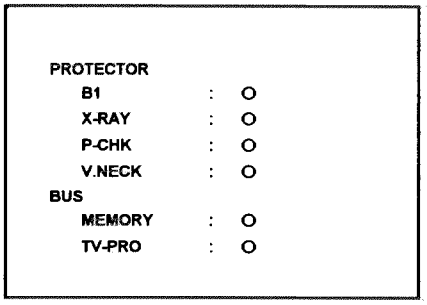



**Fig.1**

| DISPLAY | CAUSE | LED FLASHING CYCLE | INDICATED LED |
|---|---|---|---|
| B1 | OVER CURRENT PROTECTOR (B1) | 1.0 sec on / 1.0 sec off cycles | POWER |
| X-RAY | X-RAY PROTECTOR | 0.1 sec on / 0.1 sec off cycles | POWER |
| P-CHK | OVER CURRENT PROTECTOR (LOW B) | 0.5 sec on / 0.5 sec off cycles | POWER |
| V.NECK | CRT-NECK PROTECTOR | 1.0 sec on / 1.0 sec off cycles | POWER & VIDEO A |

**SELF DIAGNOSIS FUNCTION mode release**

Turn the power switch to off or disconnect the power cord from AC outlet. In this way, not to clear the error counts.

**Reset the error count**

While entered in this mode, press the MENU key and "—" (DOWN) key simultaneously. Then clear the error count of the each item.

**Fault history**

The fault history counts up to a maximum of 9 times for each item. If the number of times exceeds 9, the display remains at 9. The fault history remains stored in the memory until deleted.

## CONTENTS

| CHECK ITEM | DISPLAY | DETECTION CONTENTS |
|---|---|---|
| POWER DEF CIRCUIT | B1<br>X-RAY<br>P-CHK | Over current protector operation and over voltage protector operation. |
| | V. NECK | V. OUT is abnormal |
| MEMORY IC AND DATA | MEMORY | Normal memory IC read / write operation |
| SINGLE CHIP TV PROCESSOR | TV-PRO | Normal IC101 (IF/DET/V/C/DEF) operation |

# TM-A14PN
# TM-A14PN-K STANDARD CIRCUIT DIAGRAM

## ■ NOTE ON USING CIRCUIT DIAGRAMS

### 1. SAFETY

**The components identified by the⚠ symbol and shading are critical for safety. For continued safety replace safety critical components only with manufactures recommended parts.**

### 2.SPECIFIED VOLTAGE AND WAVEFORM VALUES

The voltage and waveform values have been measured under the following conditions.

(1)Input signal :PAL Colour bar signal
(2)Setting positions of each knob/button and variable resistor :Original setting position when shipped
(3)Internal resistance of tester :DC 20kΩ/V
(4)Oscilloscope sweeping time :H ⇒ 20μS/div
:V ⇒ 5mS/div
:Others ⇒ Sweeping time is specified
(5)Voltage values :All DC voltage values

＊Since the voltage values of signal circuit vary to some extent according to adjustments, use them as reference values.

### 3.INDICATION OF PARTS SYMBOL [EXAMPLE]

●In the PW board :R1209→R209

### 4.INDICATIONS ON THE CIRCUIT DIAGRAM

**(1)Resistors**

●Resistance value
No unit :[Ω]
K :[KΩ]
M :[MΩ]

●Rated allowable power
No indication :1/6[W]
Others :As specified

●Type
No indication :Ceramic capacitor
OMR :Oxide metal film resistor
MFR :Metal film resistor
MPR :Metal plate resistor
UNFR :Uninflammble resistor
FR :Fusible resistor

*Composition resistor 1/2 [W] is specified as 1/2S or Comp.

**(2)Capacitors**

●Capacitance value
1 or higher :[pF]
less than 1 :[μF]

●Withstand voltage
No indication :DC50[V]
Others :DC withstand voltage [V]

*Electrolytic Capacitors
47/50[Example]:Capacitance value [μF]/withstand voltage[V]

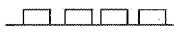
●Type
No indication :Ceramic capacitor
MY :Mylar capacitor
MM :Metalized mylar capacitor
PP :Polypropylene capacitor
MPP :Metalized polypropylene capacitor
MF :Metalized film capacitor
TF :Thin film capacitor
BP :Bipolar electrolytic capacitor
TAN :Tantalum capacitor

**(3)Coils**
No unit :[μH]
Others :As specified

**(4)Power Supply**

:B1

:B2(12V)

:9V

:5V

*Respective voltage values are indicated

**(5)Test point**

:Test point

:Only test point display

**(6)Connecting method**

:Connector

:Wrapping or soldering

:Receptacle

**(7)Ground symbol**

⊥ :LIVE side ground
⊥ :ISOLATED(NEUTRAL) side ground
⏚ :EARTH ground
▽ :DIGITAL ground

### 5.NOTE FOR REPAIRING SERVICE

This model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND and the ISOLATED(NEUTRAL) : (⊥) side GND. Therefore, care must be taken for the following points.

(1)Do not touch the LIVE side GND or the LIVE side GND and the ISOLATED(NEUTRAL) side GND simultaneously. If the above caution is not respected, an electric shock may be caused. Therefore, make sure that the power cord is surely removed from the receptacle when, for example, the chassis is pulled out.

(2)Do not short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or never measure with a measuring apparatus ( oscilloscope, etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND at the same time. If the above precaution is not respected , a fuse or any parts will be broken.

◇**Since the circuit diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.**

**Jan. 1998 No.51355**

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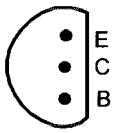
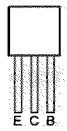
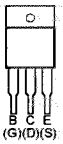
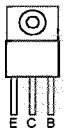
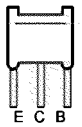
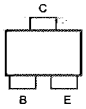
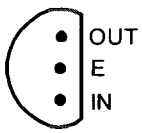
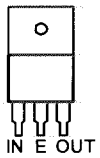
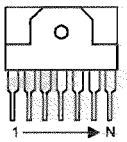
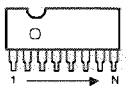
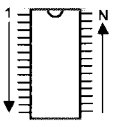
## SEMICONDUCTOR SHAPES

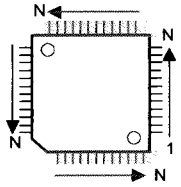
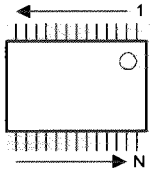
**TRANSISTOR**

| BOTTOM VIEW | FRONT VIEW | | | | TOP VIEW |
|---|---|---|---|---|---|
|  |  |  |  |  | CHIP TR  |

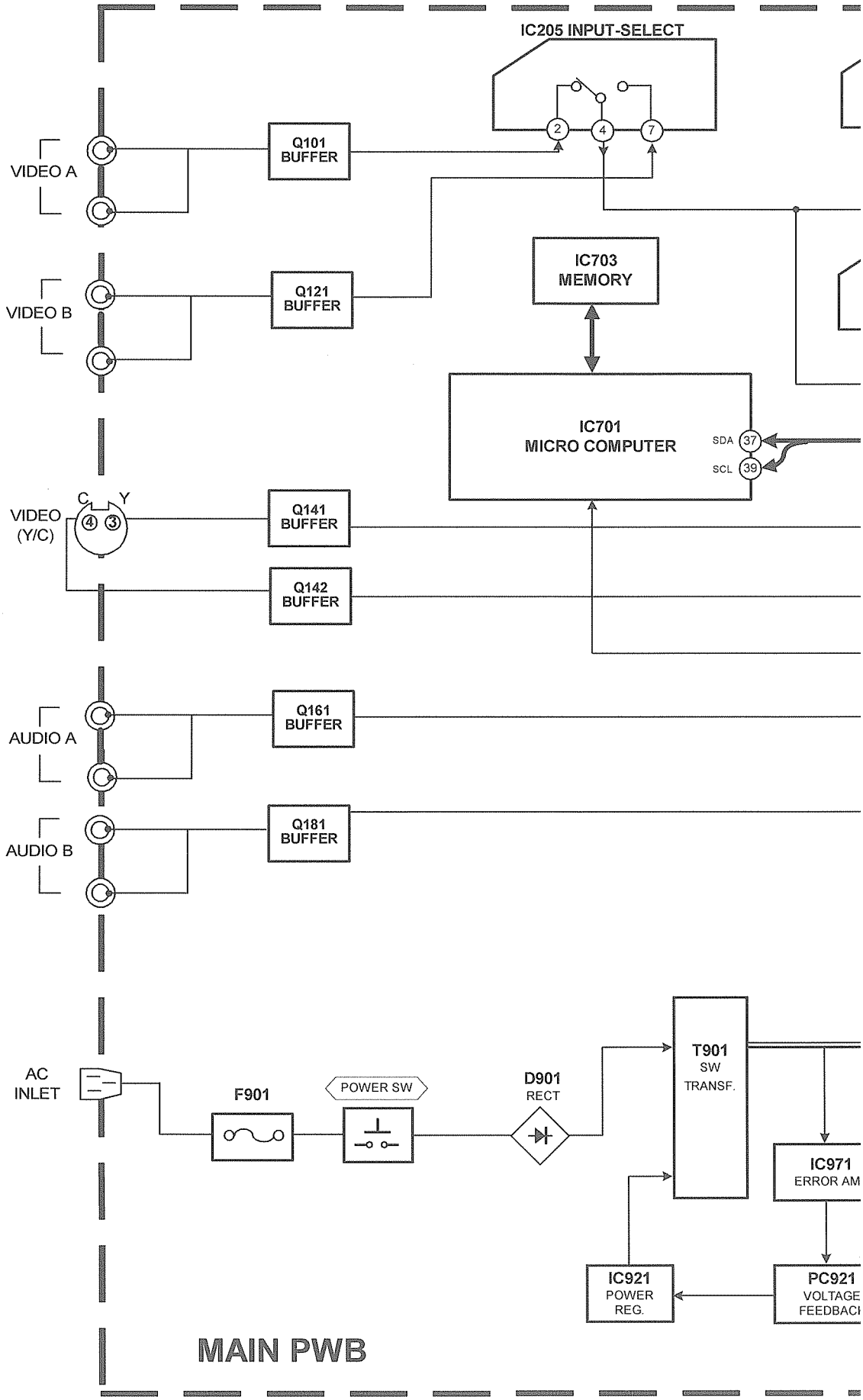
**IC**

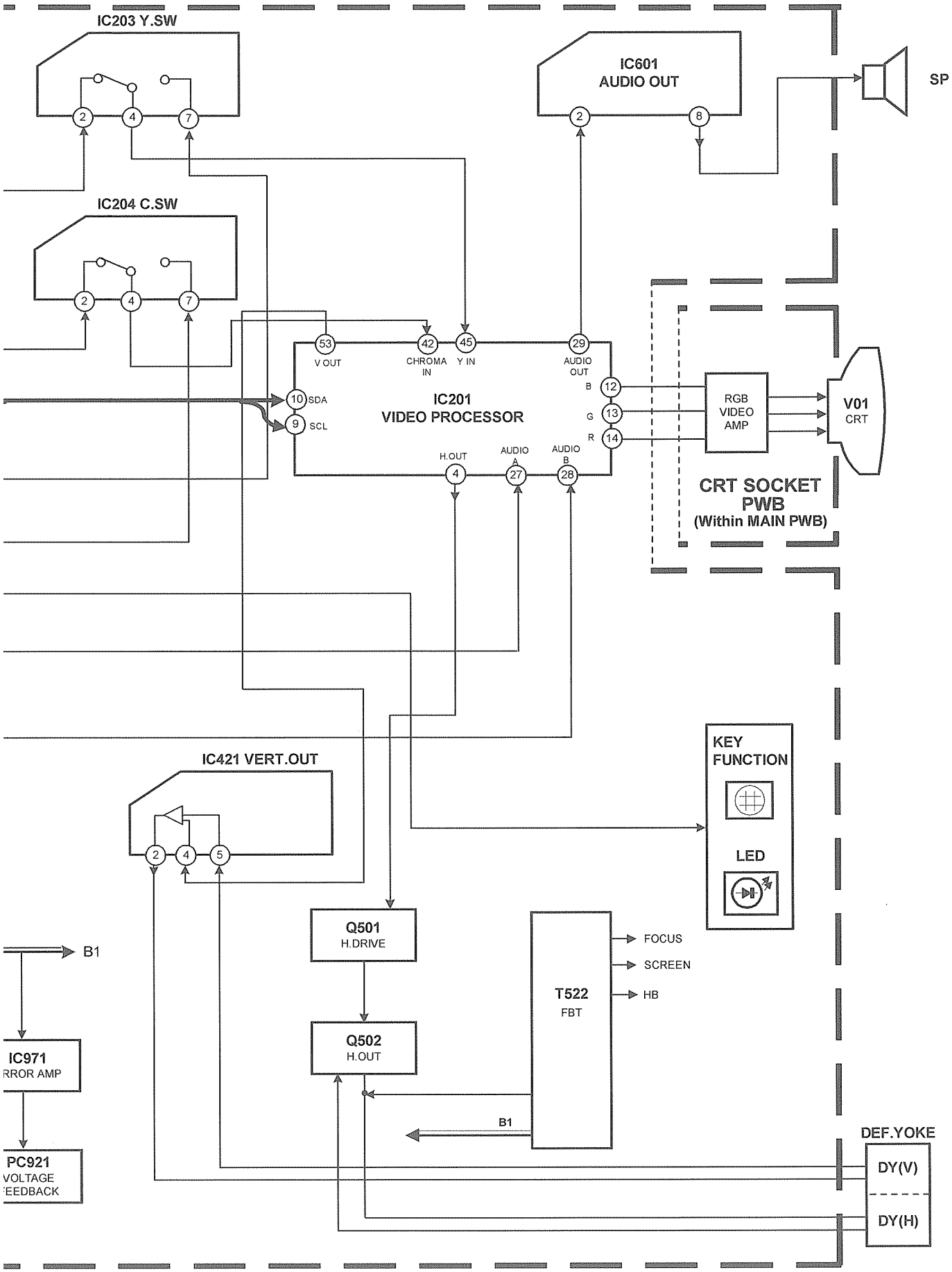
| BOTTOM VIEW | FRONT VIEW | | | TOP VIEW |
|---|---|---|---|---|
|  |  |  |  |  |

**CHIP IC**

| TOP VIEW | | |
|---|---|---|
|  |  | |

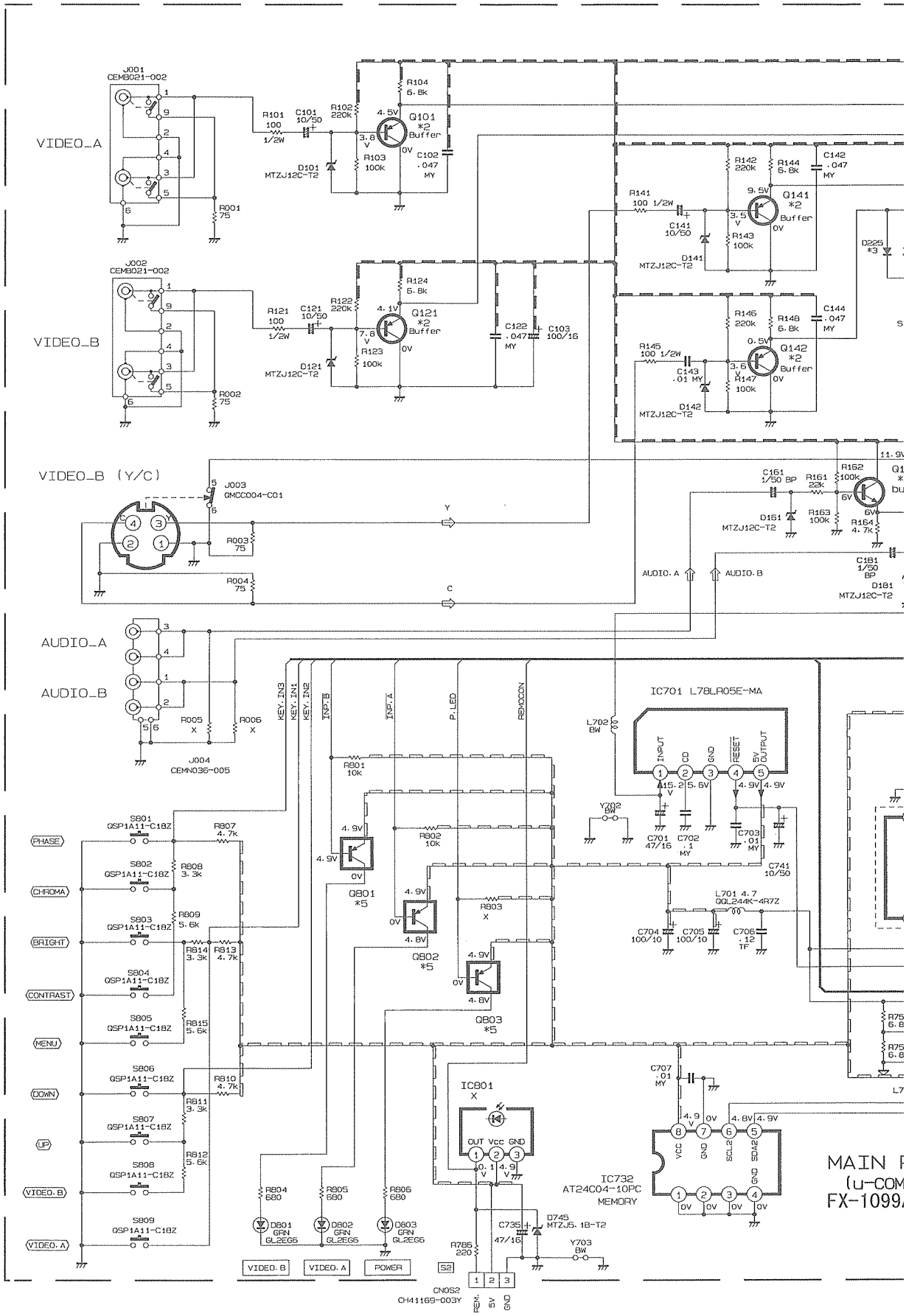
# BLOCK DIAGRAM

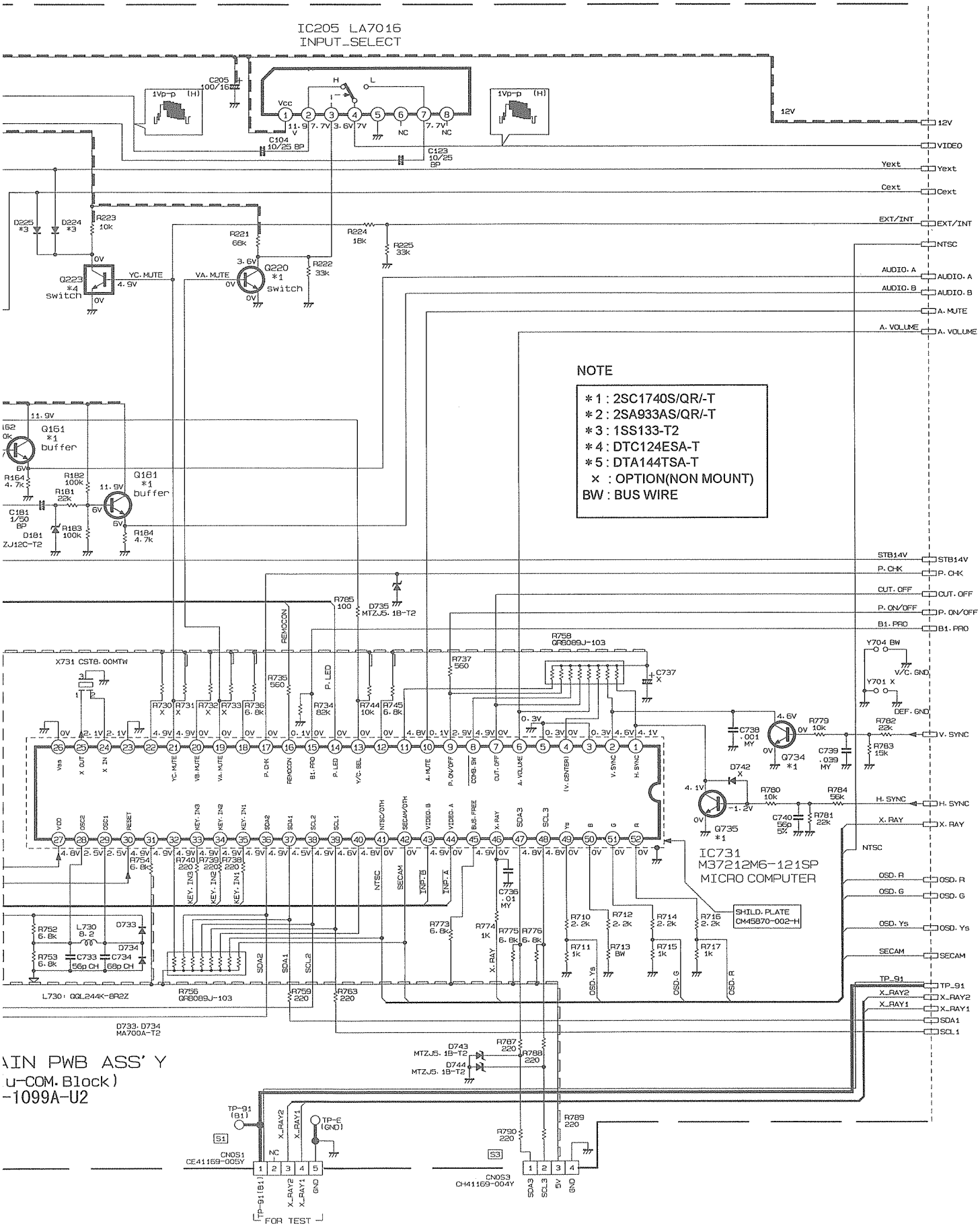



IC203 Y.SW
IC204 C.SW
IC601
AUDIO OUT
SP
V OUT
CHROMA IN
Y IN
AUDIO OUT
SDA
SCL
IC201
VIDEO PROCESSOR
B
G
R
RGB
VIDEO
AMP
V01
CRT
H.OUT
AUDIO A
AUDIO B
CRT SOCKET
PWB
(Within MAIN PWB)
IC421 VERT.OUT
KEY
FUNCTION
LED
Q501
H.DRIVE
Q502
H.OUT
T522
FBT
FOCUS
SCREEN
HB
B1
IC971
RROR AMP
PC921
VOLTAGE
EEDBACK
DEF.YOKE
DY(V)
DY(H)

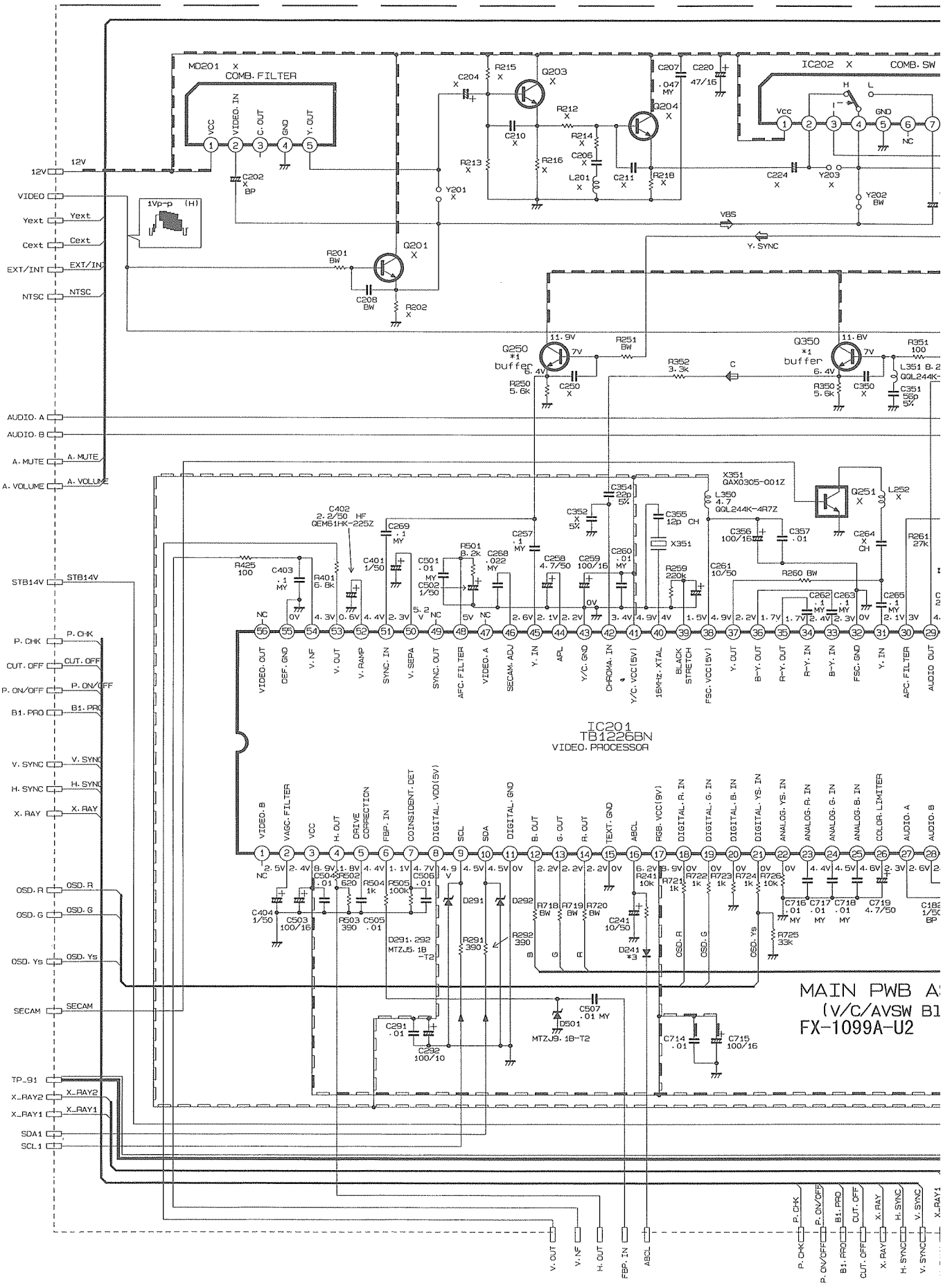
# CIRCUIT DIAGRAMS

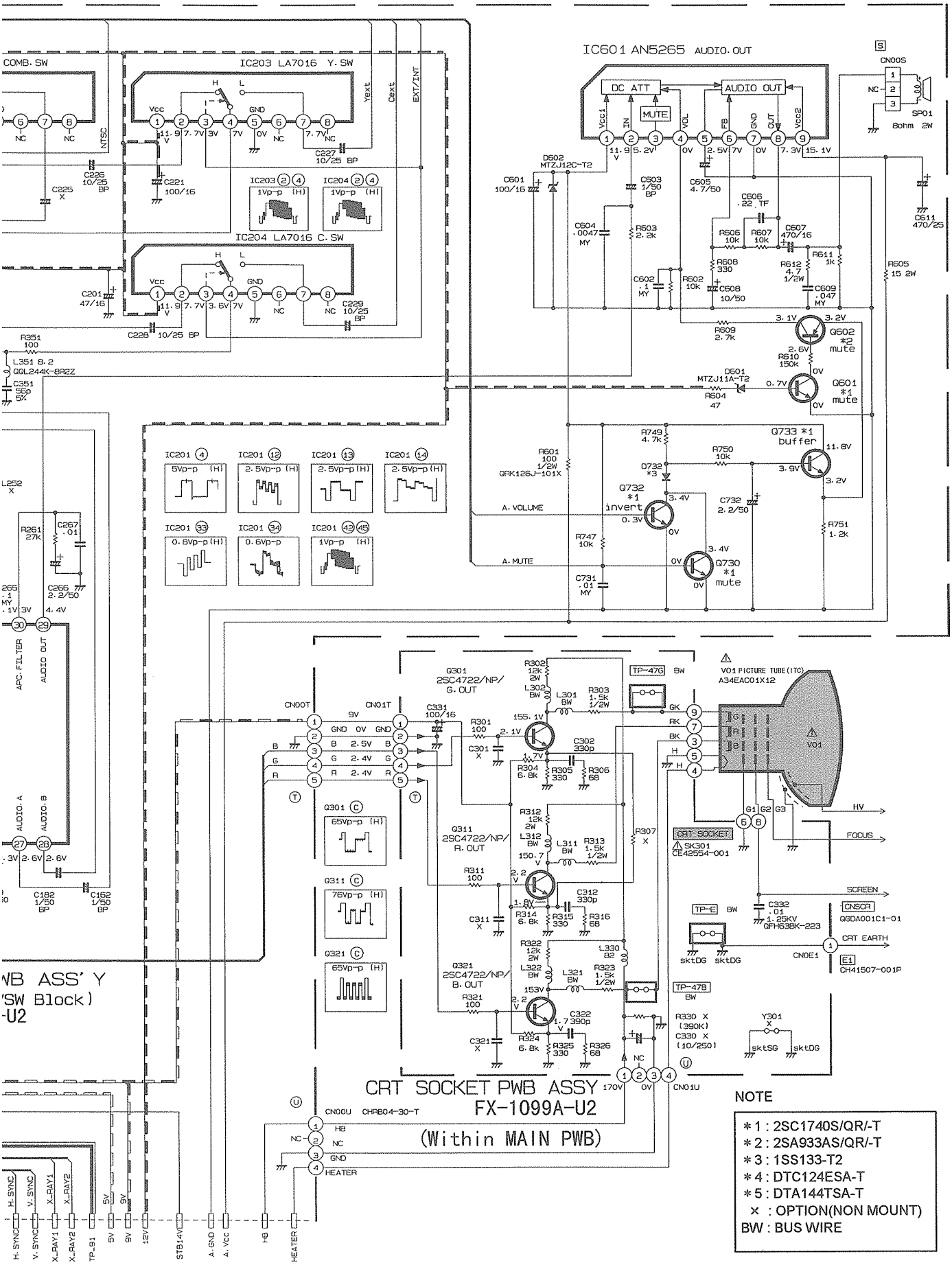
## *MAIN PWB CIRCUIT DIAGRAM* [Micro computer & Front control]



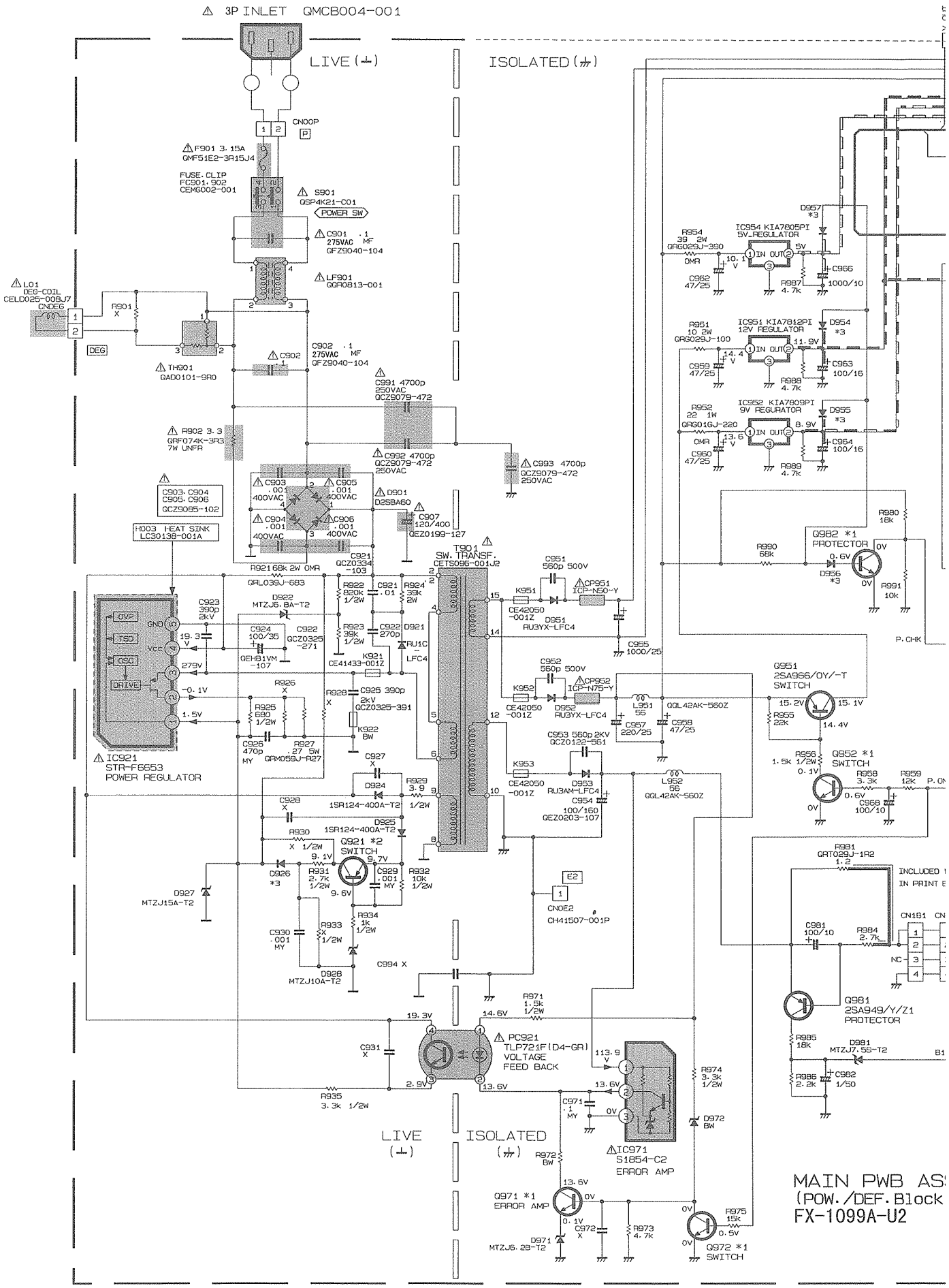

IC205 LA7016
INPUT_SELECT
NOTE
*1 : 2SC1740S/QR/-T
*2 : 2SA933AS/QR/-T
*3 : 1SS133-T2
*4 : DTC124ESA-T
*5 : DTA144TSA-T
× : OPTION(NON MOUNT)
BW : BUS WIRE
IC731
M37212M6-121SP
MICRO COMPUTER
SHILD. PLATE
CM45870-002-H
12V
VIDEO
Yext
Cext
EXT/INT
NTSC
AUDIO. A
AUDIO. B
A. MUTE
A. VOLUME
STB14V
P. CHK
CUT. OFF
P. ON/OFF
B1. PRO
V. SYNC
H. SYNC
X. RAY
OSD. R
OSD. G
OSD. Ys
SECAM
TP_91
X_RAY2
X_RAY1
SDA1
SCL1
Q161 *1 buffer
Q181 *1 buffer
Q220 *1 switch
Q223 *4 switch
Q734 *1
Q735 *1
D742
X731 CST8.00MTW
Y704 8W
Y701 X
L730: QQL244K-BR2Z
D733. D734
MA700A-T2
D735 MTZJ5. 1B-T2
D743 MTZJ5. 1B-T2
D744 MTZJ5. 1B-T2
CN0S1
CE41169-005Y
CN0S3
CH41169-004Y
FOR TEST

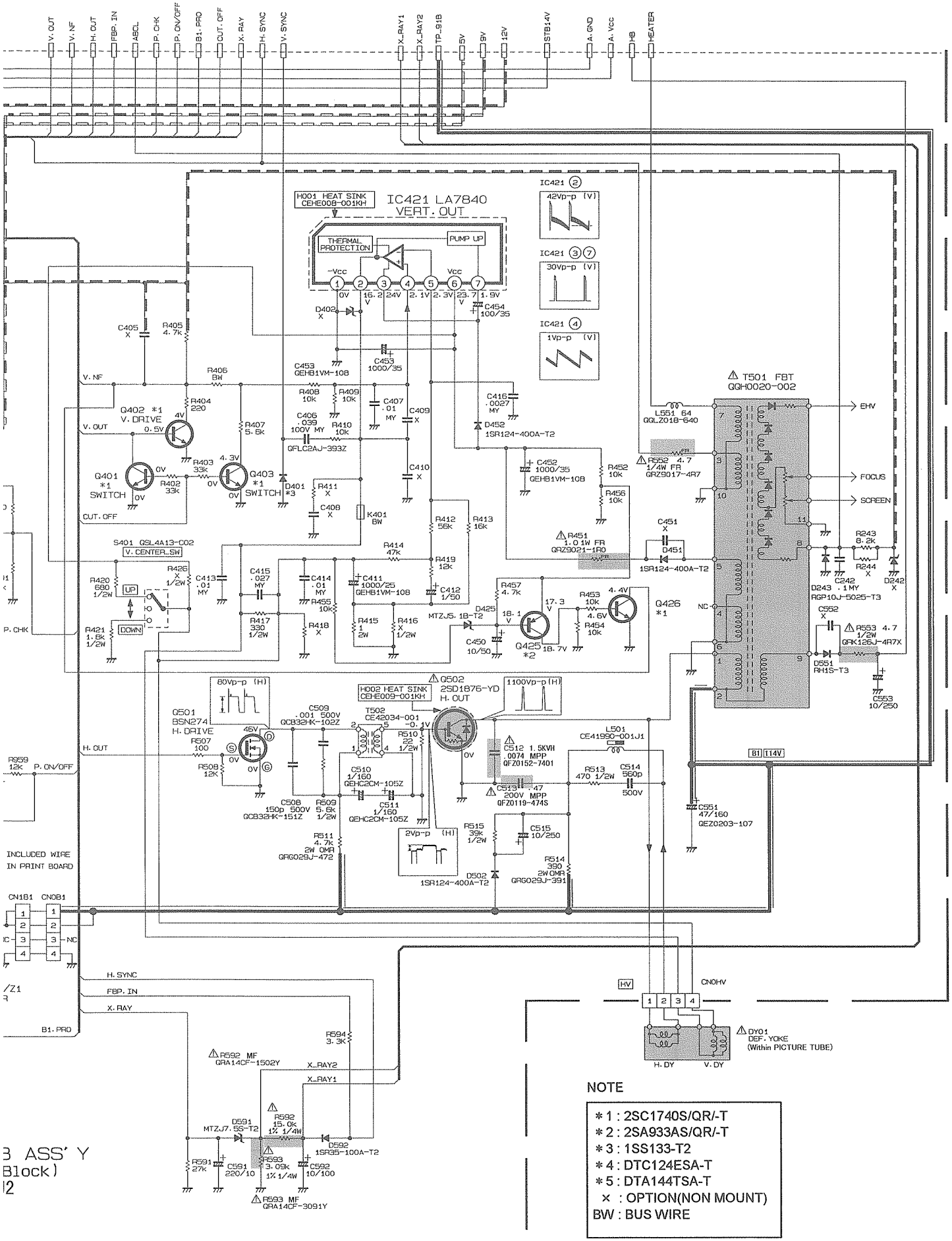
## *MAIN PWB CIRCUIT DIAGRAM* [Video processor, CRT & Audio]




IC601 AN5265 AUDIO. OUT
DC ATT
AUDIO OUT
MUTE
COMB. SW
IC203 LA7016 Y. SW
IC204 LA7016 C. SW
CRT SOCKET PWB ASSY
FX-1099A-U2
(Within MAIN PWB)
CN00U CHR804-30-T
CN01U
CRT SOCKET
SK301
CE42554-001
V01 PICTURE TUBE(ITC)
A34EAC01X12
NOTE
*1 : 2SC1740S/QR/-T
*2 : 2SA933AS/QR/-T
*3 : 1SS133-T2
*4 : DTC124ESA-T
*5 : DTA144TSA-T
× : OPTION(NON MOUNT)
BW : BUS WIRE

## *MAIN PWB CIRCUIT DIAGRAM* [Power & DEF. Circuit]



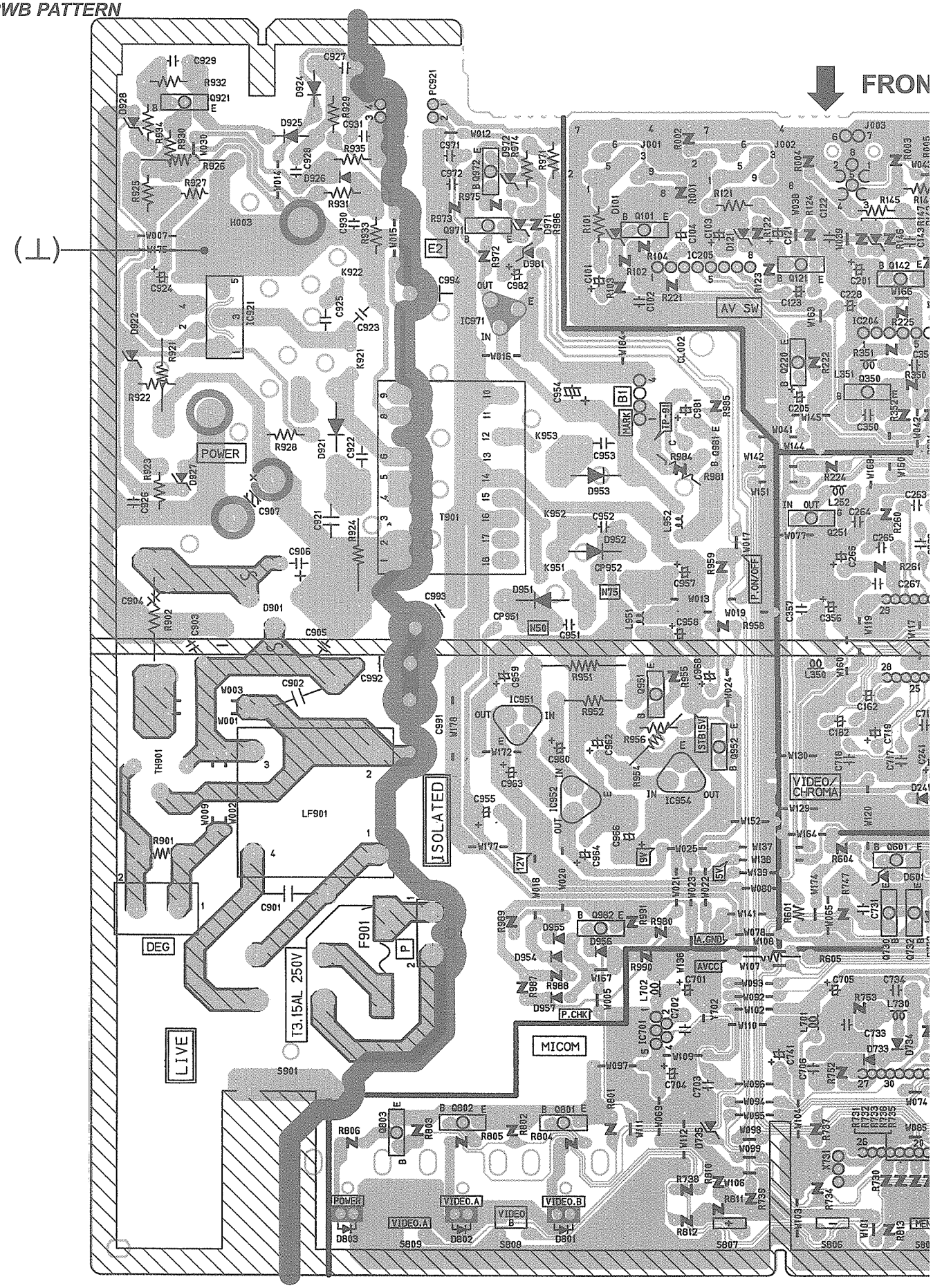



NOTE

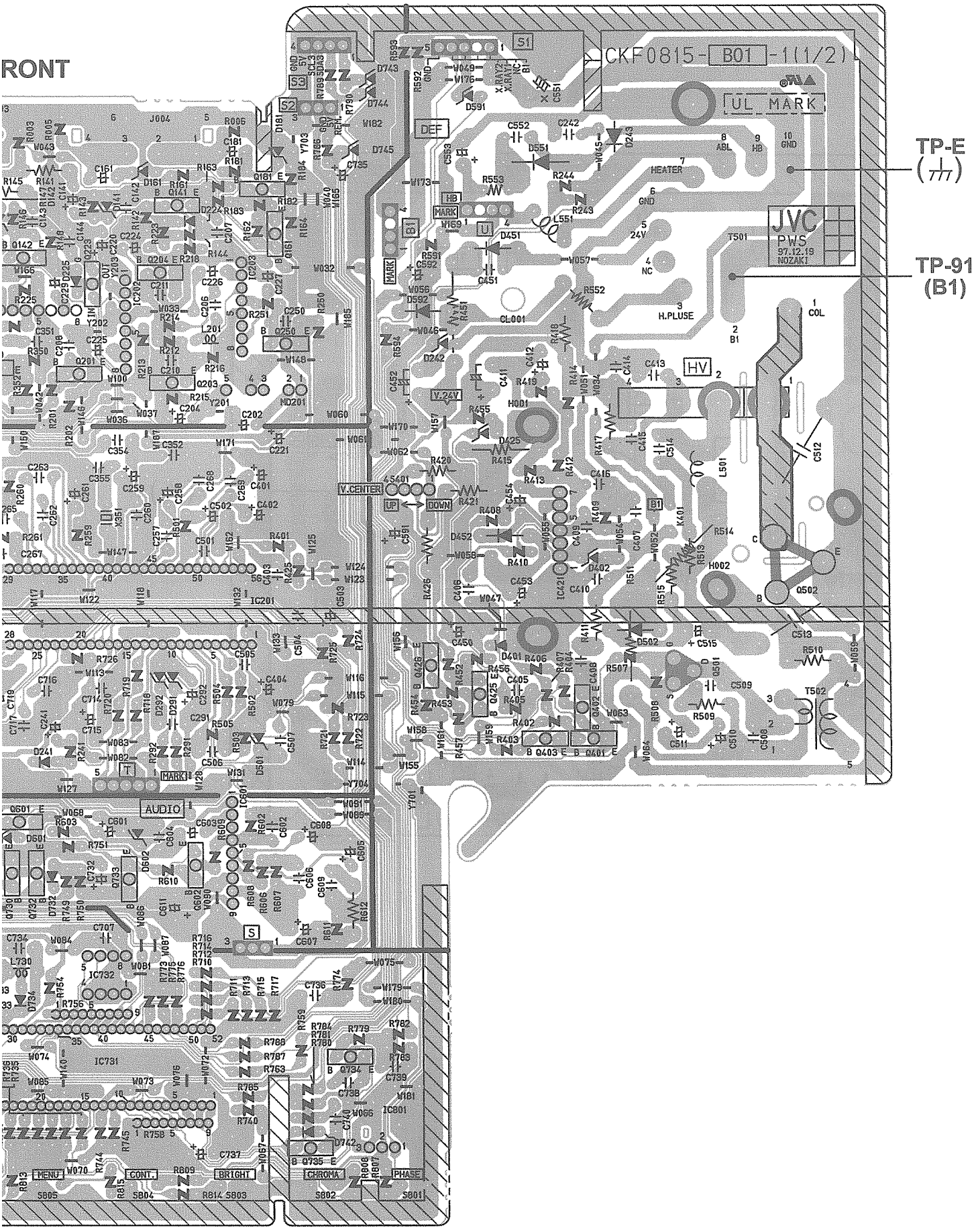
- *1 : 2SC1740S/QR/-T
- *2 : 2SA933AS/QR/-T
- *3 : 1SS133-T2
- *4 : DTC124ESA-T
- *5 : DTA144TSA-T
- × : OPTION(NON MOUNT)
- BW : BUS WIRE

# PATTERN DIAGRAMS

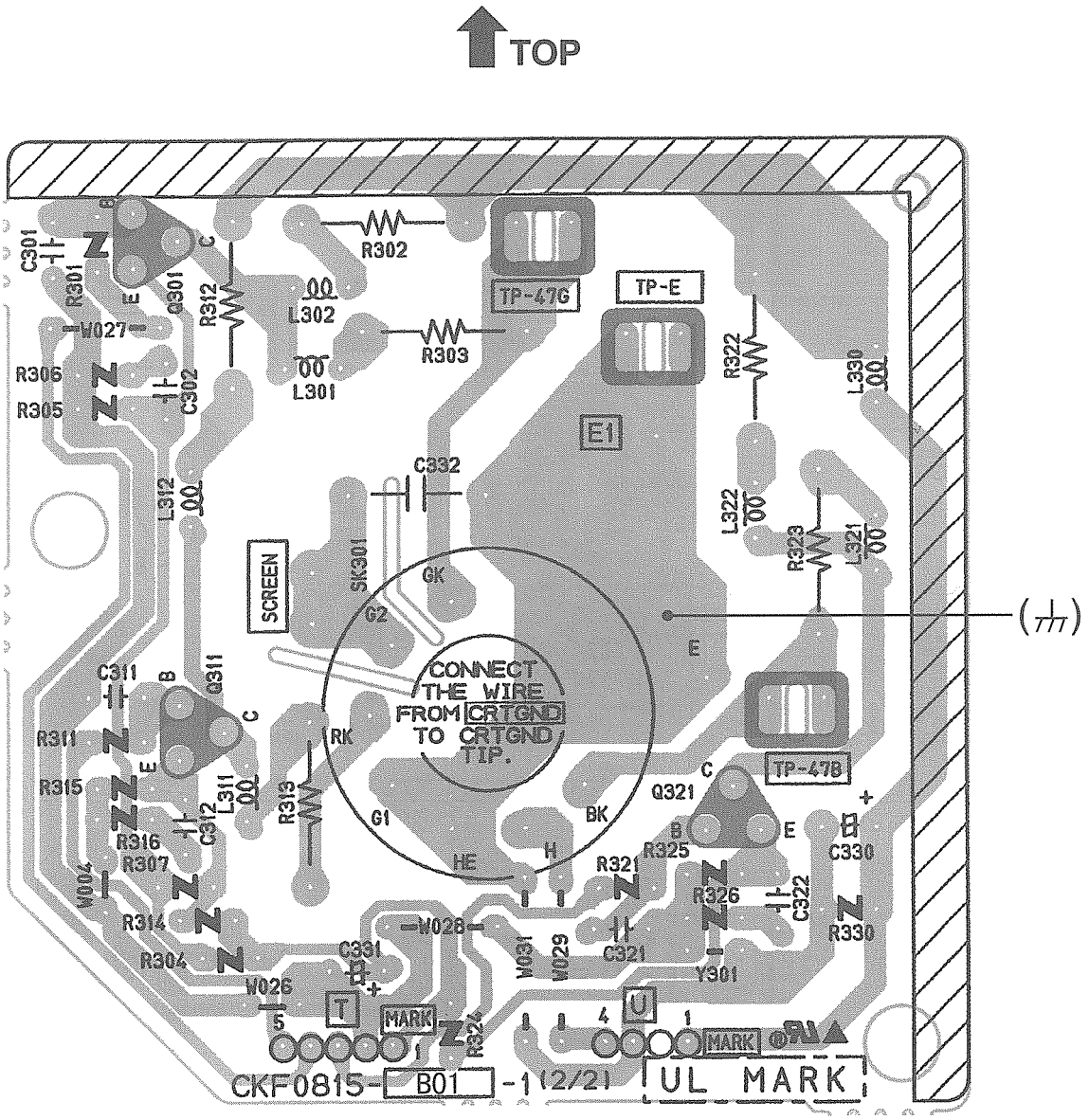
***MAIN PWB PATTERN***



N TM-A14PN
K TM-A14PN-K



## *CRT SOCKET PWB PATTERN*



# PARTS LIST

## CAUTION

- The parts identified by the ⚠ symbol are important for the safety. Whenever replacing these parts, be sure to use specified ones to secure the safety .
- The parts not indicated in this Parts List and those which are filled with lines —— in the Parts No. columns will not be supplied.
- P. W. Board Ass'y will not be supplied, but those which are filled with the Parts No. in the Parts No. columns will be supplied.

### ABBREVIATIONS OF RESISTORS, CAPACITORS AND TOLERANCES

| RESISTORS | | CAPACITORS | |
|---|---|---|---|
| C R | Carbon Resistor | C CAP. | Ceramic Capacitor |
| F R | Fusible Resistor | E CAP. | Electrolytic Capacitor |
| P R | Plate Resistor | M CAP. | Mylar Capacitor |
| V R | Variable Resistor | HV CAP. | High Voltage Capacitor |
| HV R | High Voltage Resistor | MF CAP. | Metalized Film Capacitor |
| MF R | Metal Film Resistor | MM CAP. | Metalized Mylar Capacitor |
| MG R | Metal Glazed Resistor | MP CAP. | Metalized Polystyrol Capacitor |
| MP R | Metal Plate Resistor | PP CAP. | Polypropylene Capacitor |
| OM R | Metal Oxide Film Resistor | PS CAP. | Polystyrol Capacitor |
| CMF R | Coating Metal Film Resistor | TF CAP. | Thin Film Capacitor |
| UNF R | Non-Flammable Resistor | MPP CAP. | Metalized Polypropylene Capacitor |
| CH V R | Chip Variable Resistor | TAN. CAP. | Tantalum Capacitor |
| CH MG R | Chip Metal Glazed Resistor | CH C CAP. | Chip Ceramic Capacitor |
| COMP. R | Composition Resistor | BP E CAP. | Bi-Polar Electrolytic Capacitor |
| LPTC R | Linear Positive Temperature Coefficient Resistor | CH AL E CAP. | Chip Aluminum Electrolytic Capacitor |
| | | CH AL BP CAP. | Chip Aluminum Bi-Polar Capacitor |
| | | CH TAN. E CAP. | Chip Tantalum Electrolytic Capacitor |
| | | CH AL BP E CAP. | Chip Tantalum Bi-Polar Electrolytic Capacitor |

| TOLERANCES | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| F | G | J | K | M | N | R | H | Z | P |
| ±1% | ±2% | ±5% | ±10% | ±20% | ±30% | +30%<br>-10% | +50%<br>-10% | +80%<br>-20% | +100%<br>-0% |

# CONTENTS

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■ EXPLODED VIEW ····· 32

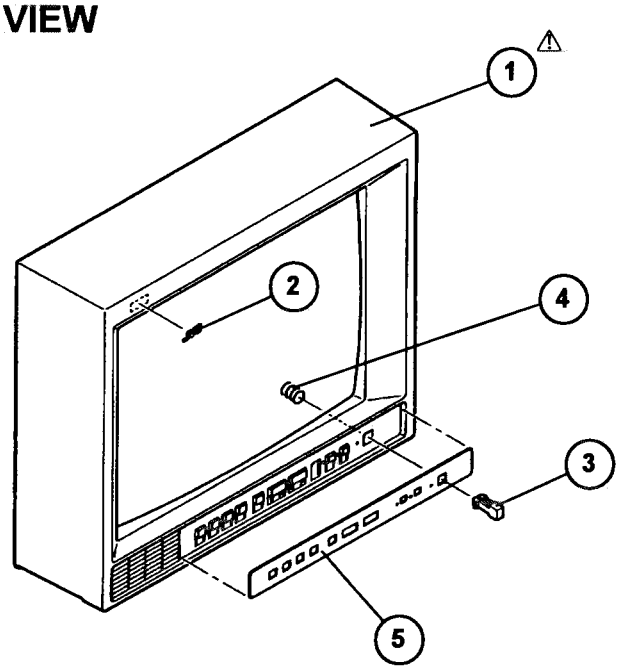
■ PRINTED WIRING BOARD PARTS LIST
● MAIN PW BOARD ASS'Y (Within CRT SOCKET PW BOARD) ····· 34

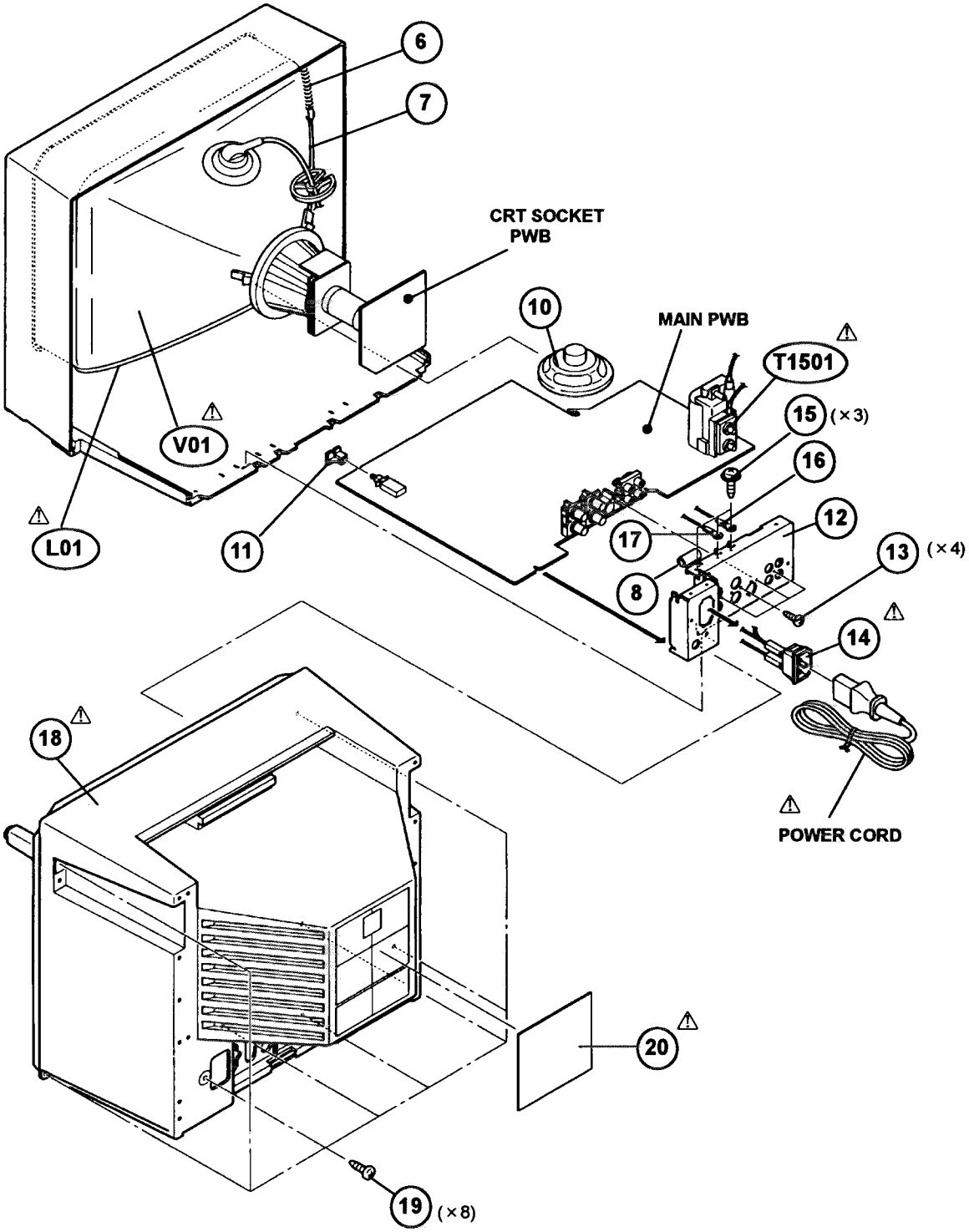
■ PACKING ····· 41
■ PACKING PARTS LIST ····· 41

# EXPLODED VIEW PARTS LIST

| ⚠ | Ref. No. | Part No. | Part Name | Description | Local |
|---|---|---|---|---|---|
| ⚠ | V01 | A34EAC01X12 | ITC TUBE(C) | Inc. DY, PC, WEDGE | * |
| ⚠ | L01 | CELD025-008J7 | DEG COIL | | * |
| ⚠ | T1501 | QQH0020-002 | FB TRANSF. | | |
| ⚠ | 1 | LC10039-001C-HK | FRONT CABINET | | * |
| | 2 | CM48149-A01 | JVC MARK | | |
| | 3 | CM46756-A01 | POWER KNOB | | |
| | 4 | CM46757-001 | SPRING | | |
| | 5 | LC20056-001A | CONTROL SHEET | | |
| | 6 | A48457-1 | SPRING | | * |
| | 7 | CHGB0016-0A | BRAIDED WIRE | | * |
| | 8 | QQR0803-001 | CORE FILTER | | |
| | 10 | CEBSS08P-01KJ2 | SPEAKER | SP01 | * |
| | 11 | CM48241-001 | KNOB CAP | | |
| | 12 | LC30150-002A-H | TERMINAL BRACKET | | * |
| | 13 | SBSB3012W | TAPPING SCREW | (×4) | * |
| ⚠ | 14 | QMCB004-001 | 3P INLET | | |
| | 15 | CM44287-00B | ASSY SCREW | (×3) | |
| | 16 | CHGT0035-0B | RECEP WIRE ASSY | | |
| | 17 | CHGT0014-BA-G | RECEP WIRE ASSY | | |
| ⚠ | 18 | LC10040-001B-HK | REAR COVER | | * |
| | 19 | GBSA4016N | TAPPING SCREW | (×8) | * |
| ⚠ | 20 | AEM2045-001-E | RATING LABEL | [TM-A14PN] | * |
| ⚠ | 20 | AEM2041-003-E | RATING LABEL | [TM-A14PN-K] | * |

# EXPLODED VIEW




6
7
CRT SOCKET PWB
10
MAIN PWB
T1501
15 (×3)
16
12
13 (×4)
17
8
14
V01
L01
11
18
POWER CORD
20
19 (×8)

# PRINTED WIRING BOARD PARTS LIST

## MAIN PW BOARD ASS'Y (FX-1099A-U2)

| ⚠ Symbol No. | Part No. | Part Name | Description | Local |
|---|---|---|---|---|
| RESISTOR | | | | |
| R1001-04 | QRD161J-750Y | C R | 75 Ω 1/6W J | * |
| R1101 | QRD121J-101SY | C R | 100 Ω 1/2W J | * |
| R1102 | QRD161J-224Y | C R | 220kΩ 1/6W J | * |
| R1103 | QRD161J-104Y | C R | 100kΩ 1/6W J | * |
| R1104 | QRD161J-682Y | C R | 6.8kΩ 1/6W J | * |
| R1121 | QRD121J-101SY | C R | 100 Ω 1/2W J | * |
| R1122 | QRD161J-224Y | C R | 220kΩ 1/6W J | * |
| R1123 | QRD161J-104Y | C R | 100kΩ 1/6W J | * |
| R1124 | QRD161J-682Y | C R | 6.8kΩ 1/6W J | * |
| R1141 | QRD121J-101SY | C R | 100 Ω 1/2W J | * |
| R1142 | QRD161J-224Y | C R | 220kΩ 1/6W J | * |
| R1143 | QRD161J-104Y | C R | 100kΩ 1/6W J | * |
| R1144 | QRD161J-682Y | C R | 6.8kΩ 1/6W J | * |
| R1145 | QRD121J-101SY | C R | 100 Ω 1/2W J | * |
| R1146 | QRD161J-224Y | C R | 220kΩ 1/6W J | * |
| R1147 | QRD161J-104Y | C R | 100kΩ 1/6W J | * |
| R1148 | QRD161J-682Y | C R | 6.8kΩ 1/6W J | * |
| R1161 | QRD161J-223Y | C R | 22kΩ 1/6W J | * |
| R1162-63 | QRD161J-104Y | C R | 100kΩ 1/6W J | * |
| R1164 | QRD161J-472Y | C R | 4.7kΩ 1/6W J | * |
| R1181 | QRD161J-223Y | C R | 22kΩ 1/6W J | * |
| R1182-83 | QRD161J-104Y | C R | 100kΩ 1/6W J | * |
| R1184 | QRD161J-472Y | C R | 4.7kΩ 1/6W J | * |
| R1221 | QRD161J-683Y | C R | 68kΩ 1/6W J | * |
| R1222 | QRD161J-333Y | C R | 33kΩ 1/6W J | * |
| R1223 | QRD161J-103Y | C R | 10kΩ 1/6W J | * |
| R1224 | QRD161J-183Y | C R | 18kΩ 1/6W J | * |
| R1225 | QRD161J-333Y | C R | 33kΩ 1/6W J | * |
| R1241 | QRD161J-103Y | C R | 10kΩ 1/6W J | * |
| R1243 | QRD161J-822Y | C R | 8.2kΩ 1/6W J | * |
| R1250 | QRD161J-562Y | C R | 5.6kΩ 1/6W J | * |
| R1259 | QRD161J-224Y | C R | 220kΩ 1/6W J | * |
| R1261 | QRD161J-273Y | C R | 27kΩ 1/6W J | * |
| R1291-92 | QRD161J-391Y | C R | 390 Ω 1/6W J | * |
| R1301 | QRE141J-101Y | C R | 100Ω 1/4W J | * |
| R1302 | QRG029J-123A | OM R | 12kΩ 2W J | * |
| R1303 | QRZ0107-152Z | C R | 1.5kΩ 1/2W K | * |
| R1304 | QRE141J-682Y | C R | 6.8kΩ 1/4W J | * |
| R1305 | QRD161J-331Y | C R | 330 Ω 1/6W J | * |
| R1306 | QRE141J-680Y | C R | 68Ω 1/4W J | * |
| R1311 | QRE141J-101Y | C R | 100Ω 1/4W J | * |
| R1312 | QRG029J-123A | OM R | 12kΩ 2W J | * |
| R1313 | QRZ0107-152Z | C R | 1.5kΩ 1/2W K | * |
| R1314 | QRE141J-682Y | C R | 6.8kΩ 1/4W J | * |
| R1315 | QRD161J-331Y | C R | 330 Ω 1/6W J | * |
| R1316 | QRE141J-680Y | C R | 68Ω 1/4W J | * |
| R1321 | QRE141J-101Y | C R | 100Ω 1/4W J | * |
| R1322 | QRG029J-123A | OM R | 12kΩ 2W J | * |
| R1323 | QRZ0107-152Z | C R | 1.5kΩ | * |
| R1324 | QRE141J-682Y | C R | 6.8kΩ 1/4W J | * |
| R1325 | QRD161J-331Y | C R | 330 Ω 1/6W J | * |
| R1326 | QRE141J-680Y | C R | 68Ω 1/4W J | * |
| R1350 | QRD161J-562Y | C R | 5.6kΩ 1/6W J | * |
| R1351 | QRD161J-101Y | C R | 100 Ω 1/6W J | * |
| R1352 | QRE141J-332Y | C R | 3.3kΩ 1/4W J | * |
| R1401 | QRD161J-682Y | C R | 6.8kΩ 1/6W J | * |
| R1402-03 | QRD161J-333Y | C R | 33kΩ 1/6W J | * |
| R1404 | QRD161J-221Y | C R | 220 Ω 1/6W J | * |
| R1405 | QRD161J-472Y | C R | 4.7kΩ 1/6W J | * |
| R1407 | QRD161J-562Y | C R | 5.6kΩ 1/6W J | * |
| R1408-10 | QRD161J-103Y | C R | 10kΩ 1/6W J | * |
| R1412 | QRD161J-563Y | C R | 56kΩ 1/6W J | * |
| R1413 | QRD161J-163Y | C R | 16kΩ 1/6W J | * |
| R1414 | QRD161J-473Y | C R | 47kΩ 1/6W J | * |
| R1415 | QRT029J-1R0 | MF R | 1.0Ω 2W J | * |
| R1417 | QRD121J-331SY | C R | 330 Ω 1/2W J | * |

| ⚠ | Symbol No. | Part No. | Part Name | Description | | | Local |
|---|---|---|---|---|---|---|---|
| | RESISTOR | | | | | | |
| | R1419 | QRD161J-123Y | C R | 12kΩ | 1/6W | J | * |
| | R1420 | QRD121J-681SY | C R | 680 Ω | 1/2W | J | * |
| | R1421 | QRD121J-182SY | C R | 1.8kΩ | 1/2W | J | * |
| | R1425 | QRD161J-101Y | C R | 100 Ω | 1/6W | J | * |
| | R1426 | QRE121J-681Y | C R | 680Ω | 1/2W | J | * |
| ⚠ | R1451 | QRZ9021-1R0 | F R | 1.0 Ω | 1W | J | * |
| | R1452-56 | QRD161J-103Y | C R | 10kΩ | 1/6W | J | * |
| | R1457 | QRD161J-472Y | C R | 4.7kΩ | 1/6W | J | * |
| | R1501 | QRE141J-822Y | C R | 8.2kΩ | 1/4W | J | * |
| | R1502 | QRE141J-101Y | C R | 100Ω | 1/4W | J | * |
| | R1503 | QRE141J-332Y | C R | 3.3kΩ | 1/4W | J | * |
| | R1504 | QRD161J-103Y | C R | 10kΩ | 1/6W | J | * |
| | R1505 | QRD161J-104Y | C R | 100kΩ | 1/6W | J | * |
| | R1507 | QRD161J-101Y | C R | 100 Ω | 1/6W | J | * |
| | R1509 | QRD121J-562SY | C R | 5.6kΩ | 1/2W | J | * |
| | R1510 | QRD121J-220SY | C R | 22 Ω | 1/2W | J | * |
| | R1511 | QRG029J-472 | OM R | 4.7kΩ | 2W | J | * |
| | R1513 | QRD121J-471SY | C R | 470 Ω | 1/2W | J | * |
| | R1514 | QRG029J-391 | OM R | 390 Ω | 2W | J | * |
| | R1515 | QRD121J-393SY | C R | 39kΩ | 1/2W | J | * |
| ⚠ | R1552 | QRZ9017-4R7 | F R | 4.7 Ω | 1/4W | J | * |
| ⚠ | R1553 | QRK126J-4R7X | C R | 4.7Ω | 1/2W | J | * |
| | R1591 | QRD161J-273Y | C R | 27kΩ | 1/6W | J | * |
| ⚠ | R1592 | QRA14CF-1502Y | MF R | 15kΩ | 1/4W | F | * |
| ⚠ | R1593 | QRA14CF-3091Y | MF R | 3.09kΩ | 1/4W | F | * |
| | R1594 | QRD161J-332Y | C R | 3.3kΩ | 1/6W | J | * |
| | R1601 | QRD12CJ-151SX | C R | 150 Ω | 1/2W | J | |
| | R1602 | QRD161J-103Y | C R | 10kΩ | 1/6W | J | * |
| | R1603 | QRD161J-222Y | C R | 2.2kΩ | 1/6W | J | * |
| | R1604 | QRD161J-470Y | C R | 47 Ω | 1/6W | J | * |
| | R1605 | QRG029J-150A | OM R | 15 Ω | 2W | J | * |
| | R1606-07 | QRD161J-103Y | C R | 10kΩ | 1/6W | J | * |
| | R1608 | QRD161J-331Y | C R | 330 Ω | 1/6W | J | * |
| | R1609 | QRD161J-272Y | C R | 2.7kΩ | 1/6W | J | * |
| | R1610 | QRD161J-154Y | C R | 150kΩ | 1/6W | J | * |
| | R1611 | QRD161J-102Y | C R | 1kΩ | 1/6W | J | * |
| | R1612 | QRD121J-4R7SY | C R | 4.7 Ω | 1/2W | J | * |
| | R1710 | QRD161J-222Y | C R | 2.2kΩ | 1/6W | J | * |
| | R1711 | QRD161J-102Y | C R | 1kΩ | 1/6W | J | * |
| | R1712 | QRD161J-222Y | C R | 2.2kΩ | 1/6W | J | * |
| | R1714 | QRD161J-222Y | C R | 2.2kΩ | 1/6W | J | * |
| | R1715 | QRD161J-102Y | C R | 1kΩ | 1/6W | J | * |
| | R1716 | QRD161J-222Y | C R | 2.2kΩ | 1/6W | J | * |
| | R1717 | QRD161J-102Y | C R | 1kΩ | 1/6W | J | * |
| | R1721-24 | QRD161J-102Y | C R | 1kΩ | 1/6W | J | * |
| | R1725 | QRD161J-333Y | C R | 33kΩ | 1/6W | J | * |
| | R1726 | QRD161J-103Y | C R | 10kΩ | 1/6W | J | * |
| | R1734 | QRD161J-823Y | C R | 82kΩ | 1/6W | J | * |
| | R1735 | QRD161J-561Y | C R | 560 Ω | 1/6W | J | * |
| | R1736 | QRD161J-682Y | C R | 6.8kΩ | 1/6W | J | * |
| | R1737 | QRD161J-561Y | C R | 560 Ω | 1/6W | J | * |
| | R1738-40 | QRD161J-221Y | C R | 220 Ω | 1/6W | J | * |
| | R1744 | QRD161J-103Y | C R | 10kΩ | 1/6W | J | * |
| | R1745 | QRD161J-682Y | C R | 6.8kΩ | 1/6W | J | * |
| | R1747 | QRD161J-103Y | C R | 10kΩ | 1/6W | J | * |
| | R1749 | QRD161J-472Y | C R | 4.7kΩ | 1/6W | J | * |
| | R1750 | QRD161J-103Y | C R | 10kΩ | 1/6W | J | * |
| | R1751 | QRD161J-122Y | C R | 1.2kΩ | 1/6W | J | * |
| | R1752-54 | QRD161J-682Y | C R | 6.8kΩ | 1/6W | J | * |
| | R1756 | QRB089J-103 | NETW.R | 10kΩ | | | * |
| | R1758 | QRB089J-103 | NETW.R | 10kΩ | | | * |
| | R1759 | QRD161J-221Y | C R | 220 Ω | 1/6W | J | * |
| | R1763 | QRD161J-221Y | C R | 220 Ω | 1/6W | J | * |
| | R1773 | QRD161J-682Y | C R | 6.8kΩ | 1/6W | J | * |
| | R1774 | QRD161J-102Y | C R | 1kΩ | 1/6W | J | * |
| | R1775-76 | QRD161J-682Y | C R | 6.8kΩ | 1/6W | J | * |
| | R1779-80 | QRD161J-103Y | C R | 10kΩ | 1/6W | J | * |
| | R1781-82 | QRD161J-223Y | C R | 22kΩ | 1/6W | J | * |

| ⚠ | Symbol No. | Part No. | Part Name | Description | | | Local |
|---|---|---|---|---|---|---|---|
| | **RESISTOR** | | | | | | |
| | R1783 | QRD161J-153Y | C R | 15kΩ | 1/6W | J | * |
| | R1784 | QRD161J-563Y | C R | 56kΩ | 1/6W | J | * |
| | R1785 | QRD161J-101Y | C R | 100 Ω | 1/6W | J | * |
| | R1786-90 | QRD161J-221Y | C R | 220 Ω | 1/6W | J | * |
| | R1801-02 | QRD161J-103Y | C R | 10kΩ | 1/6W | J | * |
| | R1804-06 | QRD161J-681Y | C R | 680 Ω | 1/6W | J | * |
| | R1807 | QRD161J-472Y | C R | 4.7kΩ | 1/6W | J | * |
| | R1808 | QRD161J-332Y | C R | 3.3kΩ | 1/6W | J | * |
| | R1809 | QRD161J-562Y | C R | 5.6kΩ | 1/6W | J | * |
| | R1810 | QRD161J-472Y | C R | 4.7kΩ | 1/6W | J | * |
| | R1811 | QRD161J-332Y | C R | 3.3kΩ | 1/6W | J | * |
| | R1812 | QRD161J-562Y | C R | 5.6kΩ | 1/6W | J | * |
| | R1813 | QRD161J-472Y | C R | 4.7kΩ | 1/6W | J | * |
| | R1814 | QRD161J-332Y | C R | 3.3kΩ | 1/6W | J | * |
| | R1815 | QRD161J-562Y | C R | 5.6kΩ | 1/6W | J | * |
| ⚠ | R1902 | QRF074K-3R3 | UNF R | 3.3 Ω | 7W | K | * |
| | R1921 | QRG039J-683A | OM R | 68kΩ | 3W | J | * |
| | R1922 | QRD121J-824SY | C R | 820kΩ | 1/2W | J | * |
| | R1923 | QRD121J-393SY | C R | 39kΩ | 1/2W | J | * |
| | R1924 | QRG029J-393 | OM R | 39kΩ | 2W | J | * |
| | R1925 | QRD121J-681SY | C R | 680 Ω | 1/2W | J | * |
| | R1927 | QRM059J-R27 | MP R | 0.27 Ω | 5W | J | * |
| | R1929 | QRD121J-3R9SY | C R | 3.9 Ω | 1/2W | J | * |
| | R1931 | QRD121J-272SY | C R | 2.7kΩ | 1/2W | J | * |
| | R1932 | QRD121J-103SY | C R | 10kΩ | 1/2W | J | * |
| | R1934 | QRD121J-102SY | C R | 1kΩ | 1/2W | J | * |
| | R1935 | QRD121J-332SY | C R | 3.3kΩ | 1/2W | J | * |
| | R1951 | QRG029J-100 | OM R | 10 Ω | 2W | J | * |
| | R1952 | QRG019J-220S | OM R | 22 Ω | 1W | J | * |
| | R1954 | QRG029J-390 | OM R | 39 Ω | 2W | J | * |
| | R1955 | QRD161J-223Y | C R | 22kΩ | 1/6W | J | * |
| | R1956 | QRD121J-152SY | C R | 1.5kΩ | 1/2W | J | * |
| | R1958 | QRD161J-332Y | C R | 3.3kΩ | 1/6W | J | * |
| | R1959 | QRD161J-123Y | C R | 12kΩ | 1/6W | J | * |
| | R1971 | QRD121J-152SY | C R | 1.5kΩ | 1/2W | J | * |
| | R1973 | QRD161J-472Y | C R | 4.7kΩ | 1/6W | J | * |
| | R1974 | QRD121J-332SY | C R | 3.3kΩ | 1/2W | J | * |
| | R1975 | QRD161J-153Y | C R | 15kΩ | 1/6W | J | * |
| | R1980 | QRD161J-183Y | C R | 18kΩ | 1/6W | J | * |
| | R1981 | QRX029J-1R2A | MF R | 1.2 Ω | 2W | J | * |
| | R1984 | QRD161J-272Y | C R | 2.7kΩ | 1/6W | J | * |
| | R1985 | QRD161J-183Y | C R | 18kΩ | 1/6W | J | * |
| | R1986 | QRD161J-222Y | C R | 2.2kΩ | 1/6W | J | * |
| | R1987-89 | QRD161J-472Y | C R | 4.7kΩ | 1/6W | J | * |
| | R1990 | QRD161J-683Y | C R | 68kΩ | 1/6W | J | * |
| | R1991 | QRD161J-103Y | C R | 10kΩ | 1/6W | J | * |
| | **CAPACITOR** | | | | | | |
| | C1101 | QETN1HM-106Z | E CAP. | 10μF | 50V | M | * |
| | C1102 | QFLC1HJ-473MZ | M CAP. | 0.047μF | 50V | J | * |
| | C1103 | QETN1CM-107Z | E CAP. | 100μF | 16V | M | * |
| | C1104 | QENC1EM-106Z | BP E CAP. | 10μF | 25V | M | * |
| | C1121 | QETN1HM-106Z | E CAP. | 10μF | 50V | M | * |
| | C1122 | QFLC1HJ-473MZ | M CAP. | 0.047μF | 50V | J | * |
| | C1123 | QENC1EM-106Z | BP E CAP. | 10μF | 25V | M | * |
| | C1141 | QETN1HM-106Z | E CAP. | 10μF | 50V | M | * |
| | C1142 | QFLC1HJ-473MZ | M CAP. | 0.047μF | 50V | J | * |
| | C1143 | QFLC1HJ-103MZ | M CAP. | 0.01μF | 50V | J | * |
| | C1144 | QFLC1HJ-473MZ | M CAP. | 0.047μF | 50V | J | * |
| | C1161-62 | QENC1HM-105Z | BP E CAP. | 1μF | 50V | M | * |
| | C1181-82 | QENC1HM-105Z | BP E CAP. | 1μF | 50V | M | * |
| | C1201 | QETN1CM-476Z | E CAP. | 47μF | 16V | M | * |
| | C1205 | QETN1CM-107Z | E CAP. | 100μF | 16V | M | * |
| | C1207 | QFLC1HJ-473MZ | M CAP. | 0.047μF | 50V | J | * |
| | C1220 | QETN1CM-476Z | E CAP. | 47μF | 16V | M | * |
| | C1221 | QETN1CM-107Z | E CAP. | 100μF | 16V | M | * |
| | C1226-29 | QENC1EM-106Z | BP E CAP. | 10μF | 25V | M | * |
| | C1241 | QETN1HM-106Z | E CAP. | 10μF | 50V | M | * |
| | C1242 | QFLC1HJ-104MZ | M CAP. | 0.1μF | 50V | J | * |
| | C1257 | QFLC1HJ-104MZ | M CAP. | 0.1μF | 50V | J | * |

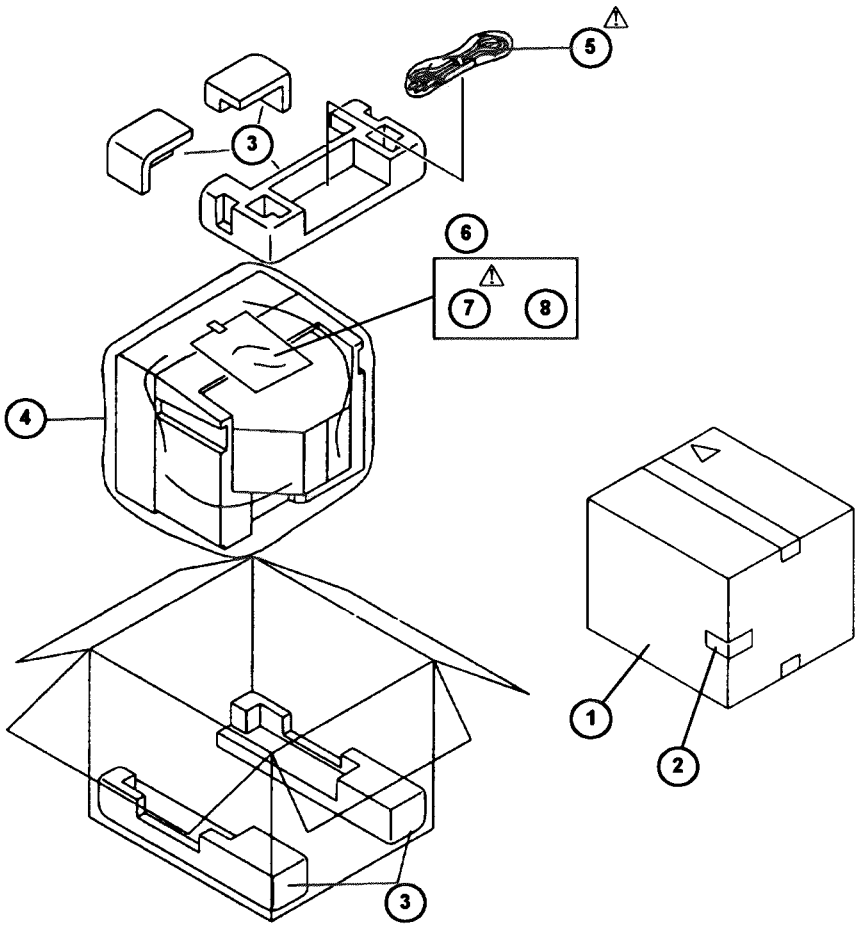
| ⚠ Symbol No. | Part No. | Part Name | Description | | | Local |
|---|---|---|---|---|---|---|
| CAPACITOR | | | | | | |
| C1258 | QETN1HM-475Z | E CAP. | 4.7μF | 50V | M | * |
| C1259 | QETN1CM-107Z | E CAP. | 100μF | 16V | M | * |
| C1260 | QFLC1HJ-103MZ | M CAP. | 0.01μF | 50V | J | * |
| C1261 | QETN1HM-106Z | E CAP. | 10μF | 50V | M | * |
| C1262-63 | QFLC1HJ-104MZ | M CAP. | 0.1μF | 50V | J | * |
| C1265 | QFLC1HJ-104MZ | M CAP. | 0.1μF | 50V | J | * |
| C1266 | QETN1HM-225Z | E CAP. | 2.2μF | 50V | M | * |
| C1267 | QCY31HK-103Z | CH C CAP. | 0.01μF | 50V | K | * |
| C1268 | QFLC1HJ-223MZ | M CAP. | 0.022μF | 50V | J | * |
| C1269 | QFLC1HJ-104MZ | M CAP. | 0.1μF | 50V | J | * |
| C1291 | QCY31HK-103Z | CH C CAP. | 0.01μF | 50V | K | * |
| C1292 | QETN1AM-107Z | E CAP. | 100μF | 10V | M | * |
| C1302 | QCS31HJ-331Z | C CAP. | 330pF | 50V | J | * |
| C1312 | QCS31HJ-331Z | C CAP. | 330pF | 50V | J | * |
| C1322 | QCS31HJ-391Z | C CAP. | 390pF | 50V | J | * |
| C1331 | QETN1CM-107Z | E CAP. | 100μF | 16V | M | * |
| C1332 | QFH63BK-223M | MM CAP. | 0.022μF | 1250V | K | * |
| C1351 | QCS31HJ-560Z | C CAP. | 56pF | 50V | J | * |
| C1354 | QCS31HJ-220Z | C CAP. | 22pF | 50V | J | * |
| C1355 | QCT25CH-120Z | C CAP. | 12pF | 50V | J | * |
| C1356 | QETN1CM-107Z | E CAP. | 100μF | 16V | M | * |
| C1357 | QCY31HK-103Z | CH C CAP. | 0.01μF | 50V | K | * |
| C1401 | QETN1HM-105Z | E CAP. | 1μF | 50V | M | * |
| C1402 | QEM61HK-225MZ | E CAP. | 2.2μF | 50V | K | * |
| C1403 | QFLC1HJ-104MZ | M CAP. | 0.1μF | 50V | J | * |
| C1404 | QETN1HM-105Z | E CAP. | 1μF | 50V | M | * |
| C1406 | QFLC2AJ-393MZ | M CAP. | 0.039μF | 100V | J | * |
| C1407 | QFLC1HJ-103MZ | M CAP. | 0.01μF | 50V | J | * |
| C1411 | QEHB1VM-108M | E CAP. | 1000μF | 35V | M | * |
| C1412 | QETN1HM-105Z | E CAP. | 1μF | 50V | M | * |
| C1413 | QFLC2AJ-103Z | M CAP. | 0.01μF | 100V | J | * |
| C1414 | QFLC1HJ-103Z | M CAP. | 0.01μF | 50V | J | * |
| C1415 | QFLC1HJ-683Z | M CAP. | 0.068μF | 50V | J | * |
| C1416 | QFLC1HJ-272Z | M CAP. | 2700pF | 50V | J | * |
| C1450 | QETN1HM-106Z | E CAP. | 10μF | 50V | M | * |
| C1452-53 | QEHB1VM-108M | E CAP. | 1000μF | 35V | M | * |
| C1454 | QETN1VM-107Z | E CAP. | 100μF | 35V | M | * |
| C1501 | QFLC1HJ-103Z | M CAP. | 0.01μF | 50V | J | * |
| C1502 | QETN1HM-105Z | E CAP. | 1μF | 50V | M | * |
| C1503 | QETN1CM-107Z | E CAP. | 100μF | 16V | M | * |
| C1504-06 | QCY31HK-103Z | CH C CAP. | 0.01μF | 50V | K | * |
| C1507 | QFLC1HJ-103MZ | M CAP. | 0.01μF | 50V | J | * |
| C1508 | QCY32HK-151RZ | CH C CAP. | 150pF | 500V | K | * |
| C1509 | QCY32HK-102RZ | CH C CAP. | 1000pF | 500V | K | * |
| C1510-11 | QEHC2CM-105MZ | E CAP. | 1μF | 160V | M | * |
| ⚠ C1512 | QFZ0152-7401 | MPP CAP. | 7400pF | 1.5kVH | ±2.5% | * |
| ⚠ C1513 | QFZ0119-474S | MPP CAP. | 0.47μF | 200V | ±3% | * |
| C1514 | QCB32HK-561Z | C CAP. | 560pF | 500V | K | * |
| C1515 | QETN2EM-106Z | E CAP. | 10μF | 250V | M | * |
| C1551 | QEZ0203-107 | E CAP. | 100μF | 160V | M | * |
| C1553 | QETN2EM-106Z | E CAP. | 10μF | 250V | M | * |
| C1591 | QETN1AM-227Z | E CAP. | 220μF | 10V | M | * |
| C1592 | QETN2AM-106Z | E CAP. | 10μF | 100V | M | * |
| C1601 | QETN1CM-107Z | E CAP. | 100μF | 16V | M | * |
| C1602 | QFLC1HJ-104MZ | M CAP. | 0.1μF | 50V | J | * |
| C1603 | QENC1HM-105Z | BP E CAP. | 1μF | 50V | M | * |
| C1604 | QFLC1HJ-472MZ | M CAP. | 4700pF | | | * |
| C1605 | QETN1HM-475Z | E CAP. | 4.7μF | 50V | M | * |
| C1606 | QFV71HJ-224MZ | TF CAP. | 0.22μF | 50V | J | * |
| C1607 | QETN1CM-477Z | E CAP. | 470μF | 16V | M | * |
| C1608 | QETN1HM-106Z | E CAP. | 10μF | 50V | M | * |
| C1609 | QFLC1HJ-473MZ | M CAP. | 0.047μF | 50V | J | * |
| C1611 | QETN1EM-477Z | E CAP. | 470μF | 25V | M | * |
| C1701 | QETN1CM-476Z | E CAP. | 47μF | 16V | M | * |
| C1702 | QFLC1HJ-104MZ | M CAP. | 0.1μF | 50V | J | * |
| C1703 | QFLC1HJ-103MZ | M CAP. | 0.01μF | 50V | J | * |
| C1704-05 | QETN1AM-107Z | E CAP. | 100μF | 10V | M | * |
| C1706 | QFV71HJ-124MZ | TF CAP. | 0.12μF | 50V | J | * |

| ⚠ | Symbol No. | Part No. | Part Name | Description | Local |
|---|---|---|---|---|---|
| | **CAPACITOR** | | | | |
| | C1707 | QFLC1HJ-103MZ | M CAP. | 0.01μF 50V J | * |
| | C1714 | QCY31HK-103Z | CH C CAP. | 0.01μF 50V K | * |
| | C1715 | QETN1CM-107Z | E CAP. | 100μF 16V M | * |
| | C1716-18 | QFLC1HJ-103MZ | M CAP. | 0.01μF 50V J | * |
| | C1719 | QETN1HM-475Z | E CAP. | 4.7μF 50V M | * |
| | C1731 | QFLC1HJ-103Z | M CAP. | 0.01μF 50V J | * |
| | C1732 | QETN1HM-225Z | E CAP. | 2.2μF 50V M | * |
| | C1733 | QCT25CH-560Z | C CAP. | 56pF 50V J | * |
| | C1734 | QCT25CH-680Z | C CAP. | 68pF 50V J | * |
| | C1735 | QETN1CM-476Z | E CAP. | 47μF 16V M | * |
| | C1736 | QFLC1HJ-103Z | M CAP. | 0.01μF 50V J | * |
| | C1738 | QFLC1HJ-102MZ | M CAP. | 1000pF 50V J | * |
| | C1739 | QFLC1HJ-103MZ | M CAP. | 0.01μF 50V J | * |
| | C1740 | QCS31HJ-560Z | C CAP. | 56pF 50V J | * |
| | C1741 | QETN1HM-106Z | E CAP. | 10μF 50V M | * |
| ⚠ | C1901 | QFZ9040-104 | MF CAP. | 0.1μFAC275V M | * |
| ⚠ | C1902 | QFZ9040-104 | MF CAP. | 0.1μFAC275V M | * |
| ⚠ | C1903 | QCZ9085-102 | C CAP. | 1000pFAC400V M | * |
| ⚠ | C1904 | QCZ9085-102 | C CAP. | 1000pFAC400V M | * |
| ⚠ | C1905 | QCZ9085-102 | C CAP. | 1000pFAC400V M | * |
| ⚠ | C1906 | QCZ9085-102 | C CAP. | 1000pFAC400V M | * |
| ⚠ | C1907 | QEZ0199-127 | E CAP. | 120μF 400V ±3% | * |
| | C1921 | QCF22HP-103M | CH C CAP. | 0.01μF 500V P | * |
| | C1922 | QCZ0122-271U | C CAP. | 270pF 2kV K | * |
| | C1923 | QCZ0122-391A | C CAP. | 390pF 2kV K | * |
| | C1924 | QEHB1VM-107M | E CAP. | 100μF 35V M | * |
| | C1925 | QCZ0122-391U | C CAP. | 390pF 2kV K | * |
| | C1926 | QFLC1HJ-471MZ | M CAP. | 470pF 50V J | * |
| | C1929-30 | QFLC1HJ-102MZ | M CAP. | 1000pF 50V J | * |
| | C1951-52 | QCY32HK-561RZ | CH C CAP. | 560pF 500V K | * |
| | C1953 | QCZ0122-561A | C CAP. | 560pF 2kV K | * |
| | C1954 | QEZ0203-107 | E CAP. | 100μF 160V M | * |
| | C1955 | QETN1EM-108Z | E CAP. | 1000μF 25V M | * |
| | C1957 | QETN1EM-227Z | E CAP. | 220μF 25V M | * |
| | C1958-60 | QETN1EM-476Z | E CAP. | 47μF 25V M | * |
| | C1962 | QETN1EM-476Z | E CAP. | 47μF 25V M | * |
| | C1963-64 | QETN1CM-107Z | E CAP. | 100μF 16V M | * |
| | C1966 | QETN1AM-108Z | E CAP. | 1000μF 10V M | * |
| | C1968 | QETN1AM-107Z | E CAP. | 100μF 10V M | * |
| | C1971 | QFLC1HJ-104MZ | M CAP. | 0.1μF 50V J | * |
| | C1981 | QETN1AM-107Z | E CAP. | 100μF 10V M | * |
| | C1982 | QETN1HM-105Z | E CAP. | 1μF 50V M | * |
| ⚠ | C1991 | QCZ9079-472 | C CAP. | 4700pFAC250V M | * |
| ⚠ | C1992 | QCZ9079-472 | C CAP. | 4700pFAC250V M | * |
| ⚠ | C1993 | QCZ9079-472 | C CAP. | 4700pFAC250V M | * |
| | **TRANSFORMER** | | | | |
| ⚠ | T1501 | QQH0020-002 | FB TRANSF. | | * |
| | T1502 | CE42034-001 | H.DRIVE TRANSF. | | * |
| ⚠ | T1901 | CETS096-001J2 | SWITCH.TRANSF. | | * |
| | **COIL** | | | | |
| | L1330 | QQL244K-820Z | COIL | 82μH K | * |
| | L1350 | QQL244K-4R7Z | COIL | 4.7μH K | * |
| | L1351 | QQL244K-8R2Z | COIL | 8.2μH K | * |
| | L1501 | CE41990-001J1 | LINEARITY COIL | | * |
| | L1551 | CELC901-064J6 | HEATER CHOKE | | * |
| | L1701 | QQL244K-4R7Z | COIL | 4.7μH K | * |
| | L1730 | QQL244K-8R2Z | COIL | 8.2μH K | * |
| | L1951-52 | CELC058-560Z | CHOKE COIL | | * |
| | **DIODE** | | | | |
| | D1101 | MTZJ12C-T2 | ZENER DIODE | | * |
| | D1121 | MTZJ12C-T2 | ZENER DIODE | | * |
| | D1141-42 | MTZJ12C-T2 | ZENER DIODE | | * |
| | D1161 | MTZJ12C-T2 | ZENER DIODE | | * |
| | D1181 | MTZJ12C-T2 | ZENER DIODE | | * |
| | D1224-25 | 1SS133-T2 | SI.DIODE | | * |
| | D1241 | 1SS133-T2 | SI.DIODE | | * |
| | D1243 | RGP10J-5025-T3 | SI.DIODE | | * |
| | D1291-92 | MTZJ5.1B-T2 | ZENER DIODE | | * |

| ⚠ | Symbol No. | Part No. | Part Name | Description | Local |
|---|---|---|---|---|---|
| | **DIODE** | | | | |
| | D1401 | 1SS133-T2 | SI.DIODE | | * |
| | D1425 | MTZJ5.1B-T2 | ZENER DIODE | | * |
| | D1451-52 | 1SR124-400A-T2 | SI.DIODE | | * |
| | D1501 | MTZJ9.1B-T2 | ZENER DIODE | | * |
| | D1502 | 1SR124-400A-T2 | SI.DIODE | | * |
| | D1551 | RH1S-T3 | SI.DIODE | | * |
| | D1591 | MTZJ7.5S-T2 | ZENER DIODE | | * |
| | D1592 | 1SR35-100A-T2 | SI.DIODE | | * |
| | D1601 | MTZJ11A-T2 | ZENER DIODE | | * |
| | D1602 | MTZJ12C-T2 | ZENER DIODE | | * |
| | D1732 | 1SS133-T2 | SI.DIODE | | * |
| | D1733-34 | MA700A-T2 | SI.DIODE | | * |
| | D1735 | MTZJ5.1B-T2 | ZENER DIODE | | * |
| | D1743-45 | MTZJ5.1B-T2 | ZENER DIODE | | * |
| | D1801 | GL2EG6 | L.E.D. (GRN) | VIDEO.B | |
| | D1802 | GL2EG6 | L.E.D. (GRN) | VIDEO.A | |
| | D1803 | GL2EG6 | L.E.D. (GRN) | POWER | |
| ⚠ | D1901 | D2SBA60 | BRIDGE DIODE | | * |
| | D1921 | RU1C-LFC4 | SI.DIODE | | * |
| | D1922 | MTZJ6.8A-T2 | ZENER DIODE | | * |
| | D1924-25 | 1SR124-400A-T2 | SI.DIODE | | * |
| | D1926 | 1SS133-T2 | SI.DIODE | | * |
| | D1927 | MTZJ15A-T2 | ZENER DIODE | | * |
| | D1928 | MTZJ10A-T2 | ZENER DIODE | | * |
| | D1951-52 | RU3YX-LFC4 | SI.DIODE | | * |
| | D1953 | RU3AM-LFC4 | SI.DIODE | | * |
| | D1954-57 | 1SS133-T2 | SI.DIODE | | * |
| | D1971 | MTZJ6.2B-T2 | ZENER DIODE | | * |
| | D1981 | MTZJ7.5S-T2 | ZENER DIODE | | * |
| | **TRANSISTOR** | | | | |
| | Q1101 | 2SA933AS/QR/T | SI.TRANSISTOR | | * |
| | Q1121 | 2SA933AS/QR/-T | SI.TRANSISTOR | | * |
| | Q1141-42 | 2SA933AS/QR/-T | SI.TRANSISTOR | | * |
| | Q1161 | 2SC1740S/QR/-T | SI.TRANSISTOR | | * |
| | Q1181 | 2SC1740S/QR/-T | SI.TRANSISTOR | | * |
| | Q1220 | 2SC1740S/QR/-T | SI.TRANSISTOR | | * |
| | Q1223 | DTC124ESA-T | DIGI.TRANSISTOR | | * |
| | Q1250 | 2SC1740S/QR/-T | SI.TRANSISTOR | | * |
| | Q1301 | 2SC4722/NP/ | SI.TRANSISTOR | | * |
| | Q1311 | 2SC4722/NP/ | SI.TRANSISTOR | | * |
| | Q1321 | 2SC4722/NP/ | SI.TRANSISTOR | | * |
| | Q1350 | 2SC1740S/QR/-T | SI.TRANSISTOR | | * |
| | Q1401-03 | 2SC1740S/QR/-T | SI.TRANSISTOR | | * |
| | Q1425 | 2SA933AS/QR/-T | SI.TRANSISTOR | | * |
| | Q1426 | 2SC1740S/QR/-T | SI.TRANSISTOR | | * |
| | Q1501 | BSN274 | F.E.T. | | * |
| ⚠ | Q1502 | 2SD1876-YD | SI.TRANSISTOR | H.OUT | * |
| | Q1601 | 2SC1740S/QR/-T | SI.TRANSISTOR | | * |
| | Q1602 | 2SA933AS/QR/-T | SI.TRANSISTOR | | * |
| | Q1730 | 2SC1740S/QR/-T | SI.TRANSISTOR | | * |
| | Q1732-35 | 2SC1740S/QR/-T | SI.TRANSISTOR | | * |
| | Q1801-03 | DTA144TSA-T | DIGI.TRANSISTOR | | * |
| | Q1921 | 2SA933AS/QR/-T | SI.TRANSISTOR | | * |
| | Q1951 | 2SA966/OY/-T | SI.TRANSISTOR | | * |
| | Q1952 | 2SC1740S/QR/-T | SI.TRANSISTOR | | * |
| | Q1971-72 | 2SC1740S/QR/-T | SI.TRANSISTOR | | * |
| | Q1981 | 2SA949/Y/C1 | SI.TRANSISTOR | | * |
| | Q1982 | 2SC1740S/QR/-T | SI.TRANSISTOR | | * |
| | **IC** | | | | |
| | IC1201 | TB1226BN | I.C. (DIGI-OTHER) | | |
| | IC1203-05 | LA7016 | I.C. (MONO-ANA) | | * |
| | IC1421 | LA7840 | I.C. (MONO-ANA) | | |
| | IC1601 | AN5265 | I.C. (MONO-ANA) | | * |
| | IC1701 | L78LR05E-MA | I.C. (MONO-ANA) | | * |
| | IC1731 | M37212M6-121SP | MICON IC | | |
| | IC1732 | AT24C04-10PC | I.C. | | * |
| ⚠ | IC1921 | STR-F6653 | I.C. (HYBRID) | | * |
| | IC1951 | KIA7812PI | I.C. (MONO-ANA) | | * |

| ⚠ | Symbol No. | Part No. | Part Name | Description | Local |
|---|---|---|---|---|---|
| | I C | | | | |
| | IC1952 | KIA7809PI | I.C. (MONO-ANA) | | * |
| | IC1954 | KIA7805PI | I.C. (MONO-ANA) | | * |
| ⚠ | IC1971 | S1854-C2 | I.C. (MONO-ANA) | | * |
| | OTHERS | | | | |
| | | CM46978-A01-H | L.E.D.HOLDER | | * |
| ⚠ | CP1951 | ICP-N50-Y | I.C.PROTECT | | * |
| ⚠ | CP1952 | ICP-N75-Y | I.C.PROTECT | | * |
| ⚠ | F1901 | QMF51E2-3R15J4 | FUSE | 3.15A | * |
| | FC1901-02 | CEMG002-001Z | FUSE CLIP | | * |
| | J1001-02 | CEMB021-002 | BNC CONNECTOR | | |
| | J1003 | QMCC004-C01 | MINI DIN JACK | | |
| | J1004 | CEMN036-005 | PIN JACK | | * |
| | K1921 | CE41433-001Z | BEADS CORE | | * |
| | K1951-53 | CE42050-001Z | CORE | | * |
| ⚠ | LF1901 | QQR0813-001 | LINE FILTER | | * |
| ⚠ | PC1921 | TLP721F(D4-GR) | I.C. (PH.COUPLER) | | * |
| | S1401 | QSL4A13-C02 | LEVER SWITCH | V.CENTER SW | * |
| | S1801 | QSP1A11-C18Z | PUSH SWITCH | PHASE | * |
| | S1802 | QSP1A11-C18Z | PUSH SWITCH | CHROMA | * |
| | S1803 | QSP1A11-C18Z | PUSH SWITCH | BRIGHT | * |
| | S1804 | QSP1A11-C18Z | PUSH SWITCH | CONTRAST | * |
| | S1805 | QSP1A11-C18Z | PUSH SWITCH | MENU | * |
| | S1806 | QSP1A11-C18Z | PUSH SWITCH | DOWN | * |
| | S1807 | QSP1A11-C18Z | PUSH SWITCH | UP | * |
| | S1808 | QSP1A11-C18Z | PUSH SWITCH | VIDEO.B | * |
| | S1809 | QSP1A11-C18Z | PUSH SWITCH | VIDEO.A | * |
| ⚠ | S1901 | QSP4K21-C01 | PUSH SWITCH | POWER | * |
| ⚠ | SK1301 | CE42554-001 | CRT SOCKET | | * |
| ⚠ | TH1901 | QAD0101-9R0 | P.THERMISTOR | | * |
| | X1351 | QAX0305-001Z | CRYSTAL | | * |
| | X1731 | CST8.00MTW | CER.RESONATOR | | * |

# PACKING

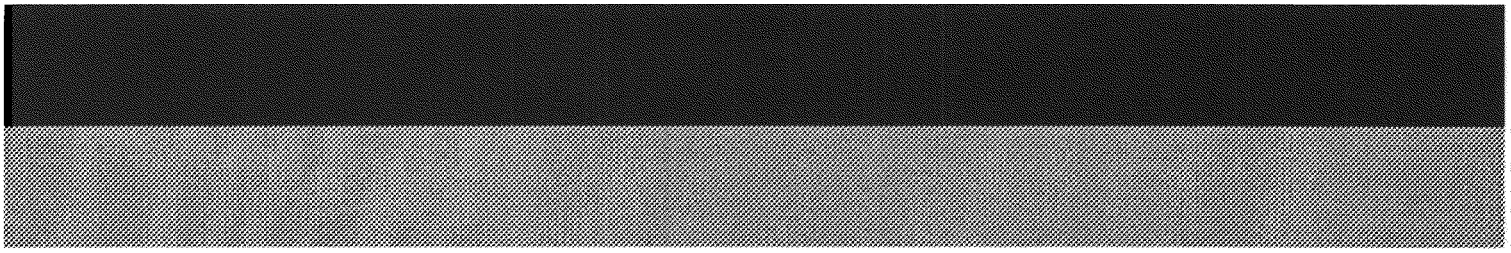



# PACKING PARTS LIST

| ⚠ | Ref. No. | Part No. | Part Name | Description | Local |
|---|---|---|---|---|---|
| | 1 | AEM1002-053-E | PACKING CASE | | * |
| | 2 | AEM1038-071-E | EURO LABEL | [TM-A14PN] | * |
| | 2 | AEM1038-072-E | EURO LABEL | [TM-A14PN-K] | * |
| | 3 | LC10041-003A-U | CUSHION ASSY | 5pcs in 1set | * |
| | 4 | AEM1004-A01-E | POLY BAG | | * |
| ⚠ | 5 | QMPL040-200-JC | POWER CORD | [TM-A14PN] | * |
| ⚠ | 5 | QMPP010-200-JC | POWER CORD | [TM-A14PN-K] | |
| | 6 | AEM3021-001-E | POLY BAG | | * |
| ⚠ | 7 | LCT0068-001A-U | INST BOOK | [TM-A14PN] | * |
| ⚠ | 7 | LCT0069-001A-U | INST BOOK | [TM-A14PN-K] | * |
| | 8 | LC20037-001A-U | X-RAY CARD | [TM-A14PN ONLY] | * |

## MEMO

## MEMO



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